ENGINEERING NEWS-RECORD

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- ▶ Skyscraper rises from busy train tunnel
- ▶ New inventory shows gains in sewage works

St. Lawrence locks and dams start operatin

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E B POWER
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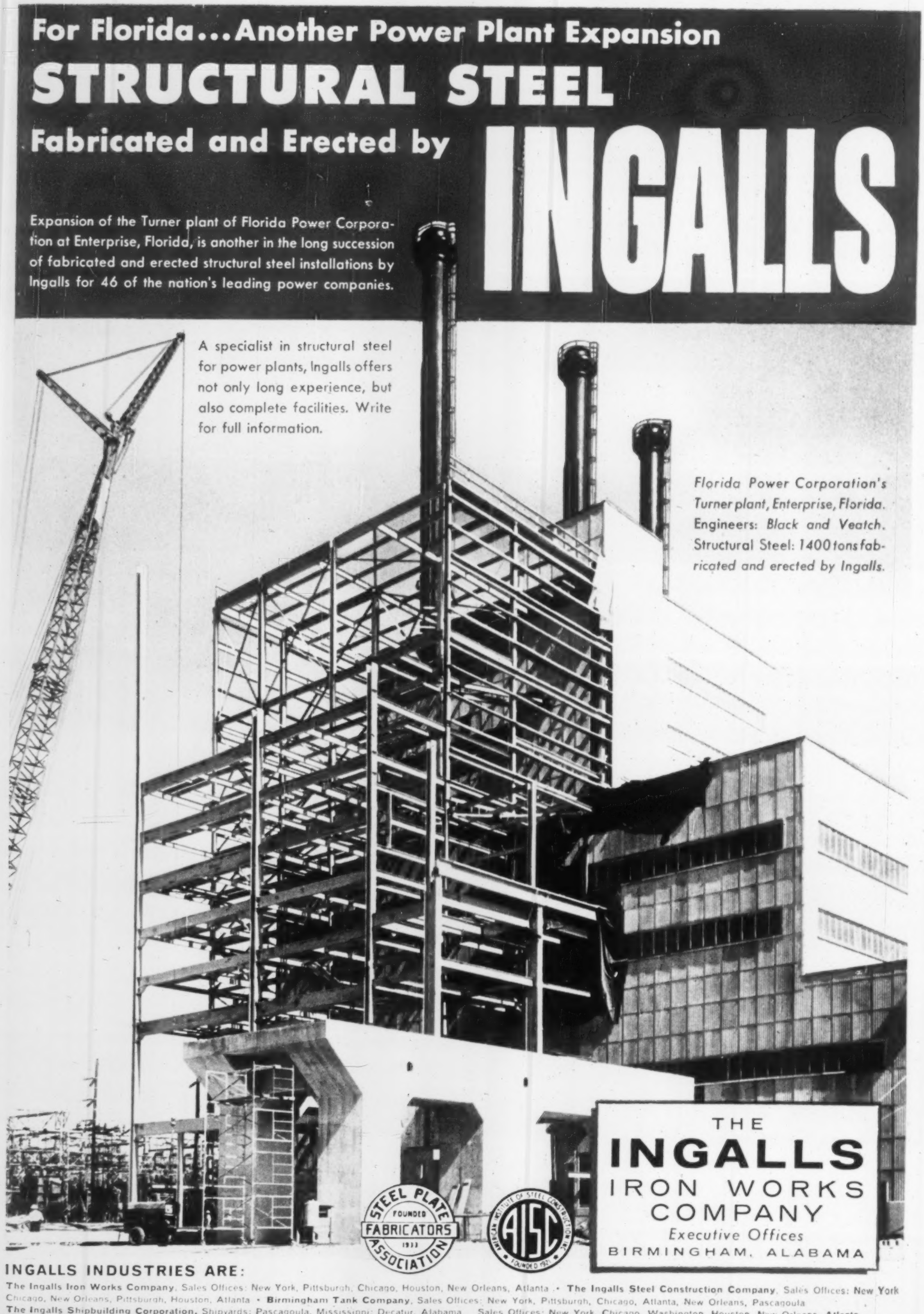

For Florida...Another Power Plant Expansion

STRUCTURAL STEEL

Fabricated and Erected by INGALLS

Expansion of the Turner plant of Florida Power Corporation at Enterprise, Florida, is another in the long succession of fabricated and erected structural steel installations by Ingalls for 46 of the nation's leading power companies.

A specialist in structural steel for power plants, Ingalls offers not only long experience, but also complete facilities. Write for full information.

Florida Power Corporation's Turner plant, Enterprise, Florida. Engineers: *Black and Veatch.* Structural Steel: *1400 tons fabricated and erected by Ingalls.*

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STEEL PLATE FABRICATORS ASSOCIATION FOUNDED 1933
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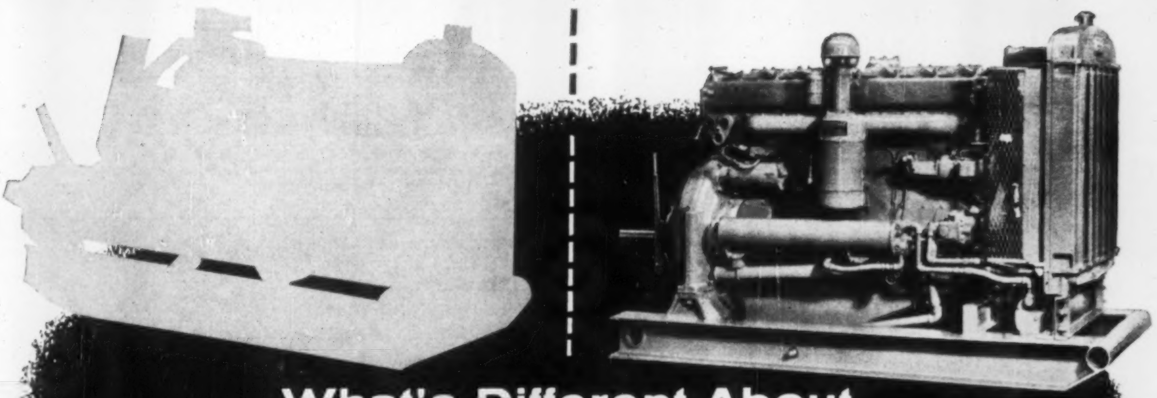


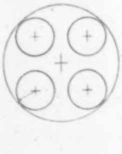
What's Different About
MURPHY DIESEL POWER?

NO OTHER ENGINE IN MURPHY'S SIZE AND POWER RANGE CAN GIVE YOU ALL THESE FEATURES

"TRUE" DIESEL OPERATION—Unlike most other small diesel engines, Murphy Diesels operate as "true" diesels. This advantage comes from Murphy's Unit Fuel Injection, open-type combustion chamber, and other advanced design features.

INSTANT RESPONSE WITH HIGH-RISING TORQUE—Murphy's exclusive Hydraulic Servo-Type Governor harnesses lubricating oil pressure to adjust injector controls for instantaneous response to load change. It means more tons per hour.

LOWER FUEL CONSUMPTION—The combination of Murphy Diesel's plain, open combustion chamber and unit fuel injection assures *complete* combustion. You get maximum power from each drop of fuel, with less engine wear, and cut the cost of production.



MORE WORKING POWER—Murphy Diesel is a heavy-duty engine, with working power to take the toughest conditions in stride. Four valves per cylinder give greater breathing capacity than conventional 2-valve design and permit higher power output. Cooler-running engine and almost unlimited valve life cut maintenance and operating costs.

These Murphy features are among the many big reasons why Murphy Diesels are gaining wider acceptance with contractors everywhere. In addition, you can select from a wide range of sizes in either full diesel (96 to 264 HP) or Dual-Fuel models (144 to 230 HP) with engine speeds of 1200 and 1400 rpm. "Packaged" Generating Units are available with capacities ranging from 64 to 165 KW. Ask about Murphy Mech-Elec Units for delivering electrical and mechanical power separately or simultaneously.

MURPHY DIESEL

MURPHY DIESEL COMPANY

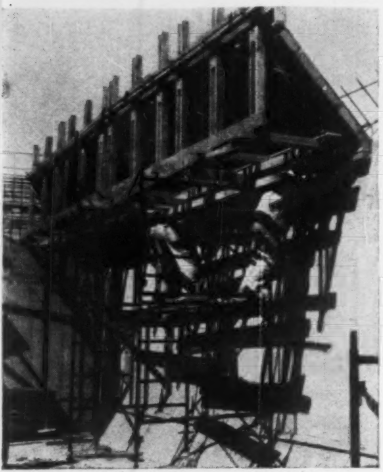
5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

384N

"Y" Wall Forming

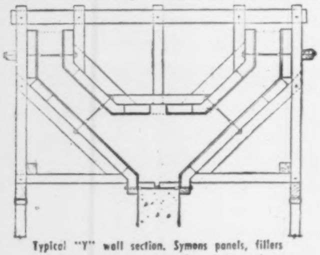


Gang Forming Licks "Y" Wall Problem

Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'-9" high walls on a tank addition to a sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons standard panels, fillers, inside and outside bay corners, which were eight feet long, were ganged in 16-foot sections and handled either by crane or rolling scaffolding. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.



Typical "Y" wall section. Symons panels, fillers and bay corners were gang formed in sections.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request.

Symons

SYMONS CLAMP & MFG. CO.
4265 Diversey Avenue, Dept. G-8
Chicago 39, Illinois

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EIGHTY-FOURTH YEAR OF PUBLICATION

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NORTHWEST PULLSHOVELS make it EASIER!

NO ONE ever lost money by buying the best in equipment! When you buy a Northwest Pullshovel you are ready for the toughest job a Pullshovel will ever be called on to handle. Whether it's a rock job like the one at the left or an easy dirt trench like the one at the right, you never have to baby your Northwest. It gets the rock out and it makes easy digging easier for greater output.

There's a wide range of capacities to choose from—from the big 95 down to the ¾ yard Model 25.

Boom design permits deep digging and yet assures long reach. Dippers fill easily and dump cleanly and can be raised high to clear the truck without spilling the load. A wide selection of side teeth lets you meet your digging problem exactly. Heavy duty Crawlers have been proved in miles of travel and travel gears are fully enclosed. Cast steel machinery bases take the shocks of digging. The "Feather-Touch" Clutch Control gives ease of operation without the complication of pumps, compressors or other delicate mechanisms. These and many other Northwest Pullshovel advantages combine to give you high output and fast moving jobs. Let a Northwest man give you the whole story. Ask for a catalog on the size machine you need.

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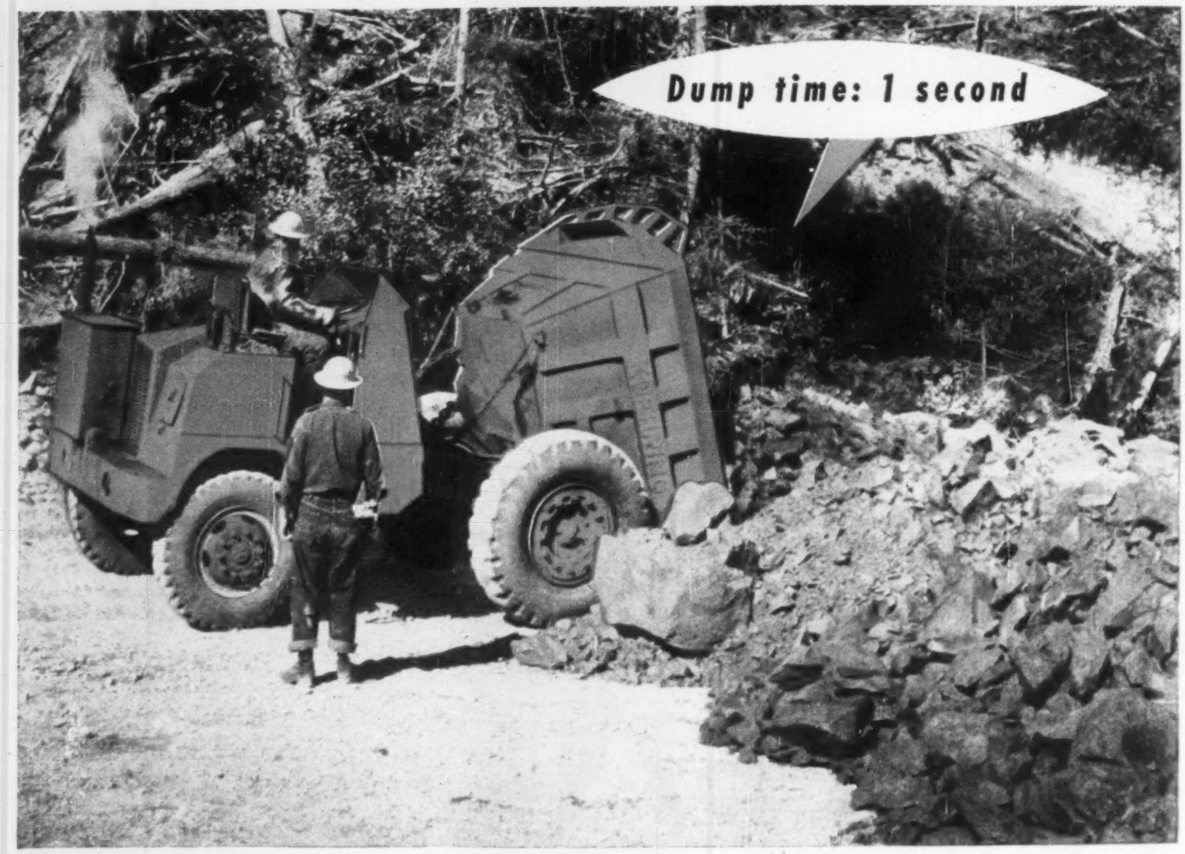
NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

P-25-9-LCG



GRAVITY-DUMP eliminates slow-acting body-hoists

There are no complicated mechanical body-hoists to slow up haul cycles — no expensive hoist replacement parts, maintenance or costly hoist down-time when you haul with Koehring Dumptor. *It has no body-hoist.* Operator trips the body-release lever, and *gravity* tilts the 6-yard body, dumps load instantly.

You get this one-second dumping action *every time,* under heaviest loads, in all temperature extremes, because *gravity-dump* never balks, never wears out. You gain an important production advantage, too. Saving 15 to 25 seconds on every dump adds up to a substantial increase in extra yards hauled per hour. For example —

Increases output 9%

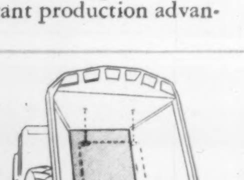
Take a typical 1,000-foot haul, where an ordinary dump truck would make 16 trips an hour. Allowing the same time to load, haul and return, Koehring Dumptor would average 17½ trips on the same cycle. That's because one-second dumping saves an average of 20 seconds dump-time on each trip — gains a total of 5.3 minutes more productive haul-time per hour. This is typical of Koehring Dumptor's basic principle — to reduce non-productive time to a minimum — and increase *work-time* for more yards per day.

What's more, Dumptor *no-turn shuttle hauling* cuts another 15 to 30 seconds off cycle time. It operates at same speeds in either direction, travels round trip without turning. Call Koehring distributor *now.*

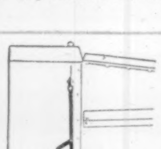
KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

K811

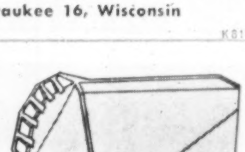
When dumping sticky materials, free-swinging kick-out pan breaks load suction. Pan bolts to floor, gives extra protection when loading rock.



Body latch for gravity-dump is simple and trouble-free. It's engaged by a single hook mounted on chassis. Handy dump lever is inside cab.



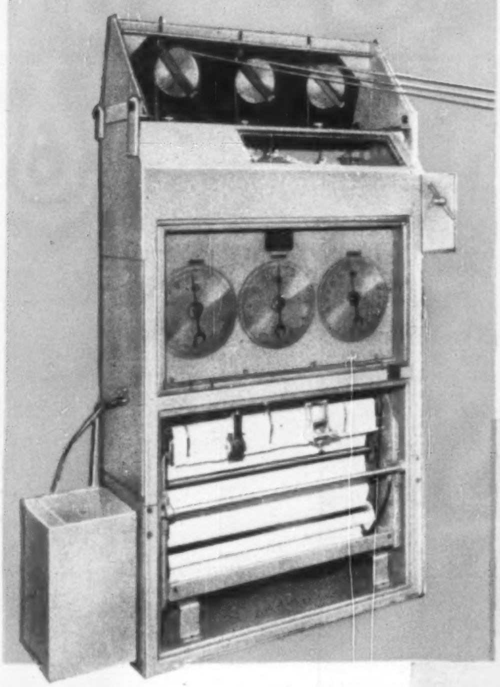
There are no bulges or ledges inside the streamlined, all-steel body. Top edge is box beam construction — sides and ends are rib-reinforced.



KOEHRING® heavy-duty DUMPTOR®

Other Koehring products: EXCAVATORS • CRANES • twinbatch® PAVERS • LONGITUDINAL FINISHERS • MUD JACKS®

Johnson® fully-automatic plants make a graphic record of every batch

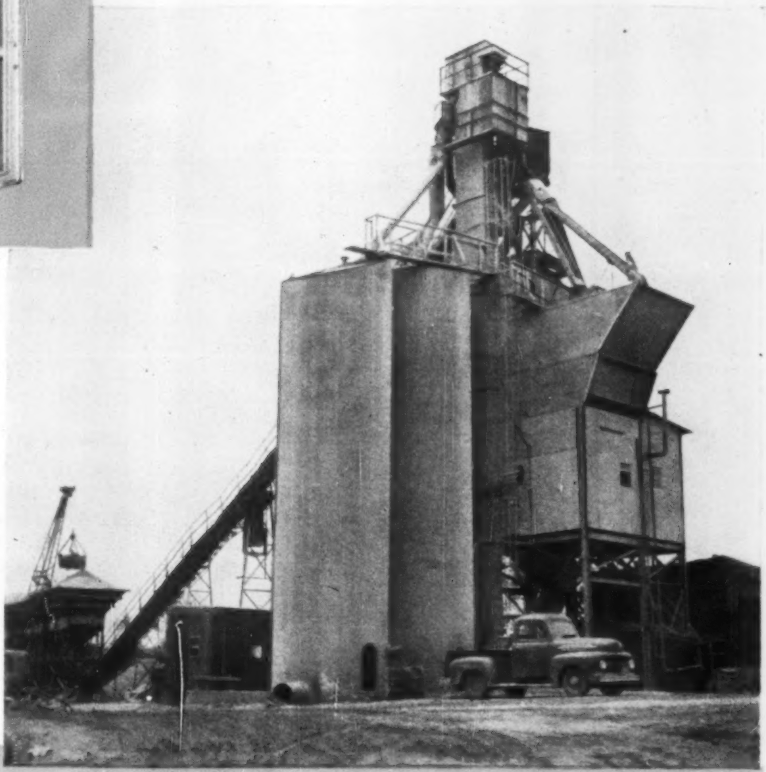


You're always *sure* of correct batch-weight — *and record* — with Johnson automatic plants and pen-recording. There is *direct transmission* of weight from each aggregate and cement batcher to individual dial scale on the control cabinet (left). All materials are recorded on *one* roll — pen lines *tell at a glance* that all mixes are correct, as specified. Each time a batch is discharged, the year, month, day, hour, *and nearest minute* are automatically stamped on the chart. A separate stamp registers batch-sequence number — positively identifies each batch for a complete, *permanent* record. Johnson system also has a moisture-compensating beam which automatically shows dry weight on sand dial — also can be used for all aggregates.

Plant is push-button operated from the batch control unit. Just a turn of the selector knob changes mix on *all* batchers simultaneously. While 7 or 12 different mix selections are usually sufficient for paving, Johnson batch controller can be arranged for 120 mix selections (and "repeater" for automatic re-batching) in big dam and ready-mix plants.

Automatic one-stop plant →

Owner of this Johnson batch plant used it to supply two 34-E pavers on a big airbase, and next on this turnpike job. During peak operation it weighed out 1.38 cu. yds., (5 materials per batch) every 20 seconds! Johnson automatic plants are available in all sizes, types, with any arrangement of single-material batchers, for one, two, or three-stop charging. Want all the facts? Contact your Johnson distributor, or send for latest catalog shown below.



concrete
PAVING PLANTS
for highways
airports

←

36-page text-book catalog covers all phases of concrete plant operation on highway and airport paving. It features: theoretical plant and paver production tables • formula for estimating truck requirements • plan-views of plant sites • pictorial "tours" through 1, 2, 3-stop plants • latest developments in plant automation • graphic weight-recording systems • comprehensive bin-selection guide. Other sections discuss cement storage, aggregate-handling systems. It's yours for the asking. Fill out coupon and mail today.

Mail to: C. S. JOHNSON COMPANY, Champaign, Illinois
Send free 36-page catalog on "Concrete Paving Plants".

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(Koehring Subsidiary) **1806 ENR**

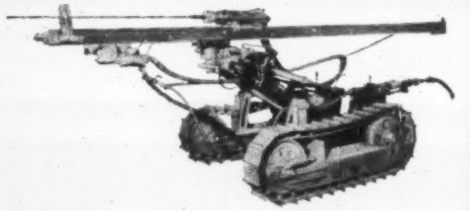
C. S. JOHNSON CO., CHAMPAIGN, ILL. • STOCKTON, CALIF.

CP "Torque Control" Impact Wrenches drive thousands of high strength bolts to exact tightness on the Carquinez Bridge. No hand torquing required. American Bridge erection crews find the 23 pound weight, the extremely short 15½" length, and the safely enclosed torque mechanism of the CP-610 real "life savers" where footing is tricky and speed is important. Torque control to 600 foot pounds . . . can be used as a standard wrench for higher torques.

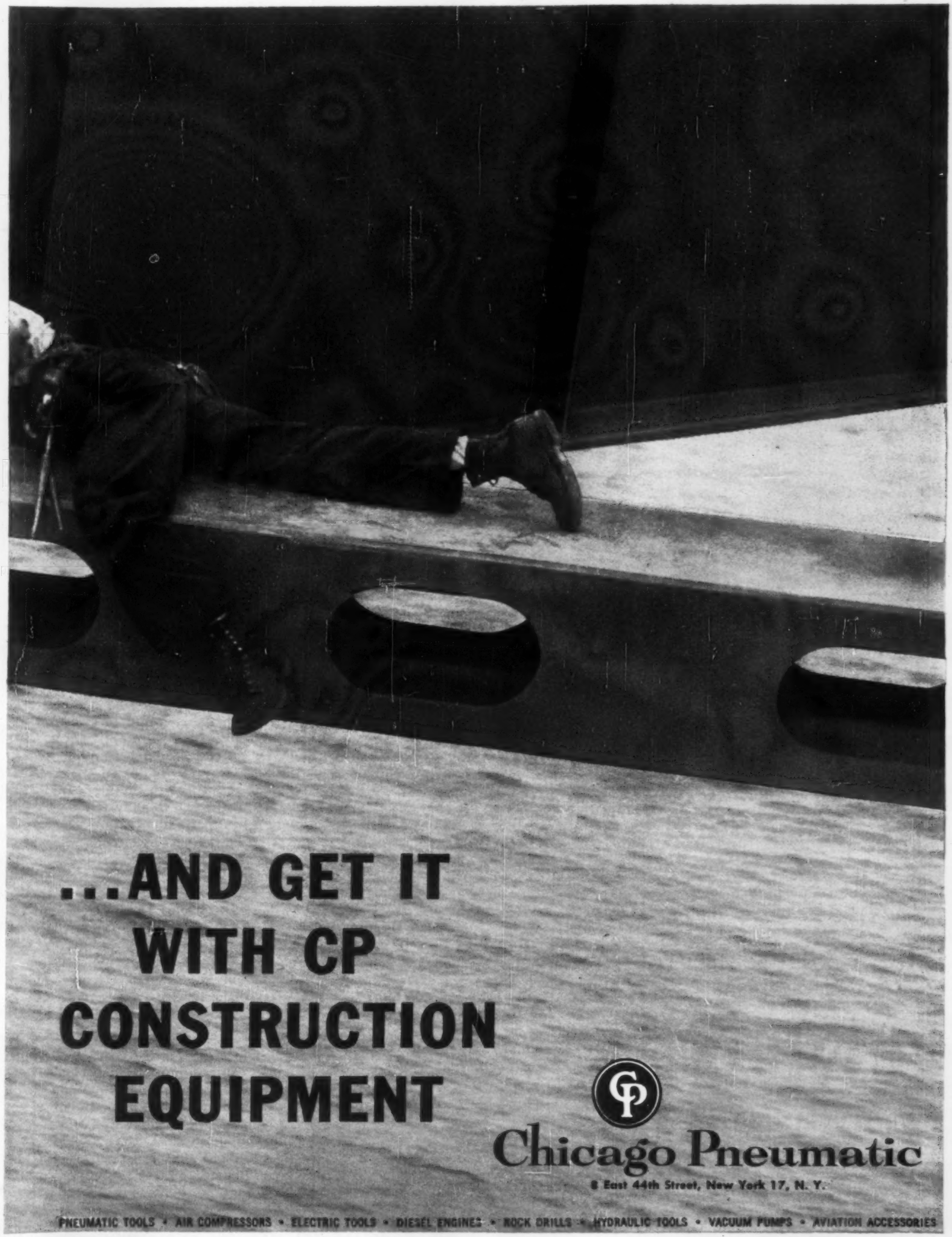
CALL FOR EXTRA OUTPUT

CHICAGO PNEUMATIC

Anytime there's a high demand for air you'll find CP "Power Vane" Rotary Compressors ready for action. "Power Vane" Rotaries have the ability to provide maximum output with minimum attention—do work-horse jobs with little margin for failure. Capacities: 125; 210; 365; 600 and 900 cu. ft.



Known for its excellent tramming, high productivity and stability, the Tracdril features 6" channel constructed drill carriage; Oliver tracks; knee action; hydraulically actuated U-arm, drill carriage positioner, and sliding cone. Mounts one of two heavy-duty deep-hole drills with standard-neutral-reverse rotation for use with coupled steel.


...AND GET IT
WITH CP
CONSTRUCTION
EQUIPMENT
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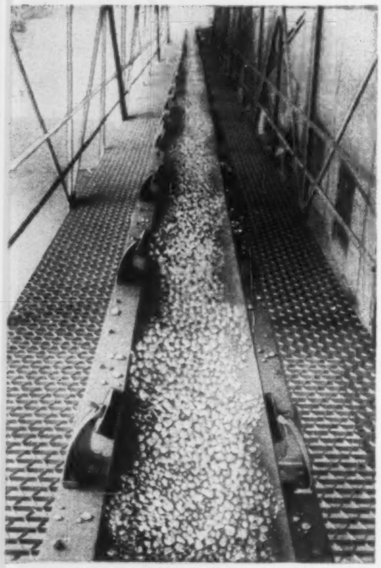
PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

STUMBLING HAZARD
ELIMINATED

Spilled materials on a solid walkway caused workmen to stumble and turn ankles. Installation of 80% open Irving Mesh Grating allowed materials to fall through and minimized the hazard.



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For Safe, Strong, Slip-Proof Stair Treads Specify
IRVING "VIZABLEDG" TREADS

★

Manufacturers of Riveted, Pressure-Locked, and Welded Gratings of Steel, Aluminum and other metals.

"A FITTING GRATING FOR EVERY PURPOSE"

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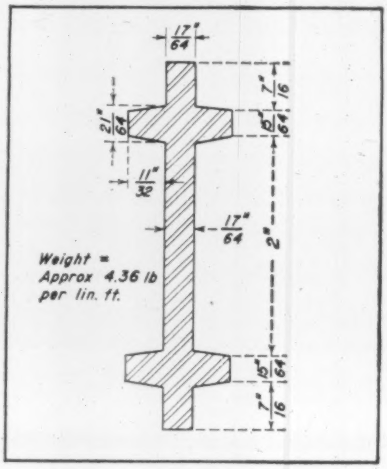
Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA

Reader Comment

Latest Style In 19th Century Reinforcing

Sir—An odd-shaped reinforcing bar, uncovered during demolition of an old California county courthouse, was described in Mr I. N. Brotherton's letter and sketch (ENR May 8, p. 10). The unidentified detail shows a part of what was known as the Columbian System of Reinforcing (see sketch).



In the period 1900 to 1910 there were many patented types of reinforcing, including the Kahn, the Hennibeque and the Columbian systems. All the systems can be found in old handbooks of that period.

Here at the Naval Academy the original portion of Bancroft Hall (the midshipmen's dormitory and living quarters and one of the largest buildings in the world) and Halligan Hall, a shops and office building, were constructed using the same Columbian System of reinforcing and concrete construction noted in the aforesaid letter.

While this system of reinforcing would hardly pass a modern building code, static load tests show a surprising strength for this type of framing with less deflection and greater ultimate strength than would be expected from the most rigorous theoretical structural analysis.

Paul J. Wiegard
District Public Works Office
U. S. Naval Academy
Annapolis, Md.

Sir—A check of an old Carnegie Steel Co. book of shapes, dated 1903, indicates that the steel section found in the old California county courthouse is a hanger bar (M935).

I inherited the book of shapes from my grandfather, the late Alexander Sussman, for many years a steel fabricator in New York City.

Howard Lieberman
Structural Engineer
Parsons, Brinkerhoff, Hall & Macdonald
New York 6, N. Y.

Sir—In reply to Mr. Brotherton's query, the odd shaped rebar is from the now extinct "Columbian Floor System". In the late 1800's it was the latest thought insofar as reinforcing was concerned.

T. C. Whalen
Professional Engineer
Pottstown, Pa.

More About Prestressing

Sir—A reply is demanded by certain points of a letter (ENR, Jan. 16, p. 11) which challenged the future of prestressing concrete.

Hundreds of unusual and difficult projects in prestressed concrete have been designed and built with complete success throughout the world, many under extremely trying conditions. The collapse of one school roof (ENR Oct. 18, 1956, p. 27 and July 11, 1957, p. 28) certainly provides no reason to fear this valuable method of construction any more than the failures experienced with conventional construction justify the fear of reinforced concrete and steel as inadequate building material. The gain in economy for a wide variety of structural situations is no longer a matter of advertising but a thoroughly established fact which an innumerable number of satisfied clients are in a position to confirm.

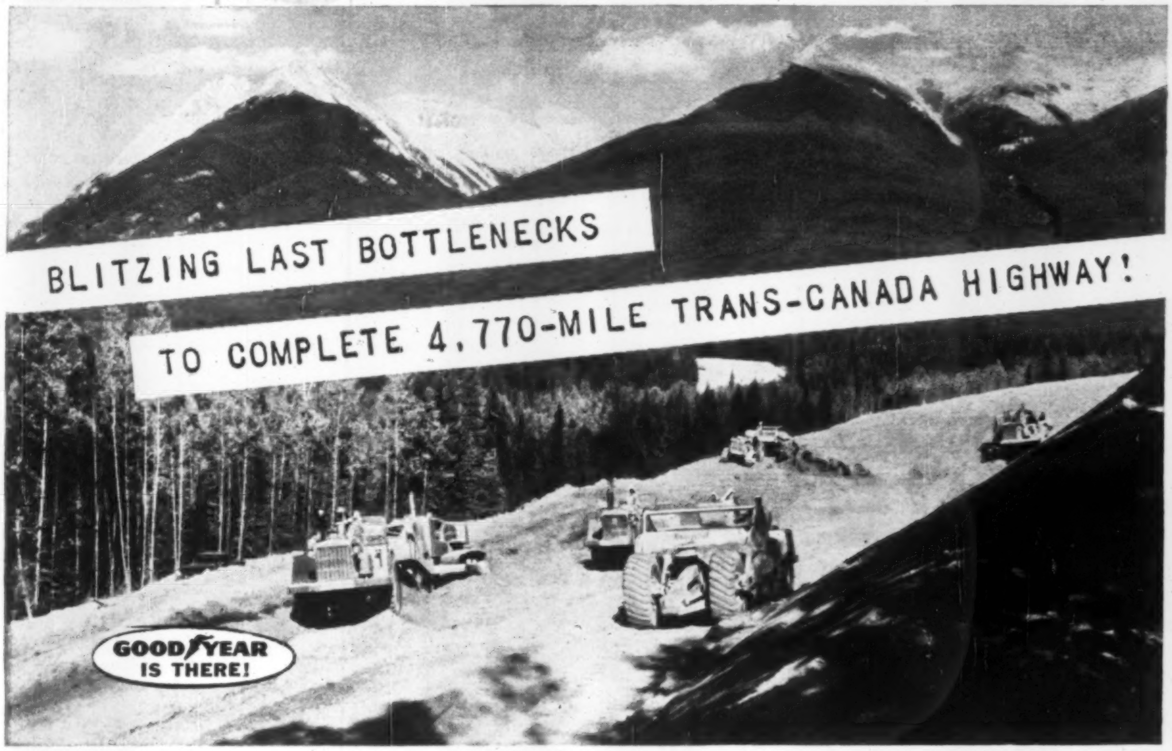
Esthetics are rightfully an important feature of design, and in this regard prestressed concrete has no peer. Modern design practice accounts nicely for the variability of concrete strength by reasonably conservative limitations on allowable stresses. The problem of

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

GOOD YEAR
TIRES

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

COUNTLESS TONS. Its $400,000,000 price tag attests the scope of this job—which runs nearly **1/5** the way around the world! Up to their ears in countless tons of muck, muskeg, rock, shale and dirt, the contractors are coming up with a minimum of 22-foot pavement on 5- to 10-foot shoulders—and only 271 miles of "impassable" gaps still to go! Shown here is an all-mountain sector in British Columbia which previously boasted *no roads at all*. From coast to coast, Trans-Canada's hard-won miles have felt the sure imprint of Goodyear 3-T Nylon Cord off-the-road tires.

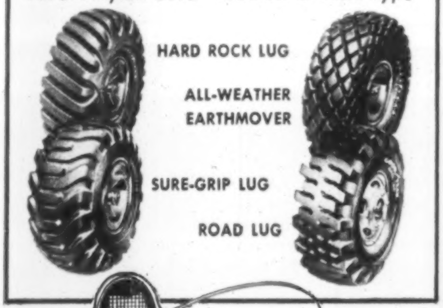

BLITZING LAST BOTTLENECKS
TO COMPLETE 4,770-MILE TRANS-CANADA HIGHWAY!
GOODYEAR IS THERE!

Triple-Tough 3-T Nylon Cord—

the **extra** *durability* **exclusive** *with*

Off-The-Road Tires by Goodyear!

All 3-T Nylon Cord—*Tubeless or Tube-Type*



TEMPERED LIKE STEEL!

Like steel, tire cord must be *tempered* to be tough. Goodyear's exclusive process, involves Tension, Temperature and Time, *triple-tempers* cord to make it TRIPLE-TOUGH—for longest tire life, lowest cost-per-yard.

From treads to beads, Goodyear off-the-road tires bring you the most advanced and experienced design, engineering and construction known today.

High among Goodyear's exclusive advancements is TRIPLE-TOUGH 3-T NYLON CORD—called the greatest tire *saver* in 23 years.

Only Goodyear off-the-road tires have it—yet they cost no more than other makes built with ordinary Nylon cord.

And on-the-job savings have been spectacular—on some of the toughest jobs on earth!

Try TRIPLE-TOUGH 3-T NYLONS on *your* toughest jobs. You'll agree that "Goodyear is There"—in every way! Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

HOME BUILDERS' SEWAGE PUMPING GUIDE

5 pumping problems . . . and the engineers' solutions

1 PROBLEM: A builder who was erecting 50 homes found that he could pump sewage to the municipal sewerage lines . . . but that his pumping station probably would be abandoned in less than 5 years when the municipality built a larger station to serve his and anticipated adjacent developments.

SOLUTION: His consulting engineer drew up plans for a pumping station, employing a vertical enclosed shaft pump installed in a dry pit. Yeomans supplied the equipment in package form . . . ready for installation in the concrete pit. When the station is abandoned, the pump can be removed and reinstalled elsewhere.

Complete pumping station cost $\$125^{00}$ per home.

2 PROBLEM: A land developer who was planning for 75 homes was told that he must put in a sewage pumping station to meet the codes of the adjoining village. Location of the station required that it take a minimum of space, be odor-free and clog-proof, and easy to install and maintain.

SOLUTION: The engineers designed a low-cost pumping station equipped with a Yeomans Pneumatic Ejector . . . the "package" Expelsor®. This is a complete, factory-assembled and wired, self-contained unit, with built-in controls and ready-mounted air compressor. It's ready to set in place, connect, and put into operation.

The complete station cost $\$120^{00}$ per home.

3 PROBLEM: A builder of 150 homes in a nonseweraged area had no room for a sewage pumping station above ground. Moreover, because of ground conditions, an underground station with concrete walls was not practical. A second consideration was the cost of equipping and installing the station.

SOLUTION: His consulting engineer recommended the Yeomans all-steel, factory-assembled, underground station. Inside the watertight steel tank are two vertical centrifugal pumps, the pipes, the valves and controls, a dehumidifier, etc.—the completely equipped station. The contractor had only to lower and anchor it in the ground and make the connections.

Cost of complete station $\$105^{00}$ per home.

4 PROBLEM: A planned community of 1000 executive and professional men's houses was to have independent facilities except for water and sewerage . . . civic center, fire and police protection, parks, etc. A permanent sewage pumping station was to be installed under the street approaching the shopping center. The location made it imperative that there be neither sanitary nuisances nor periodic maintenance.

SOLUTION: The engineers put a Shone® with mechanical controls in the concrete pit under the street . . . but installed the air compressor powering the ejector in the nearby firehouse. To date, the ejector has required *no* maintenance. The electrically operated air compressor is easily accessible for lubrication and routine inspection above ground . . . and gets preventive maintenance because of its location.

Cost of complete station $\$30^{00}$ per home.

5 PROBLEM: A subdivider was putting up 1500 new homes. Sewer lines for the entire development led to a central collecting well, and sewage was to be pumped from here into the metropolitan sanitary district system. The sewage lift station was disguised as a limestone gatehouse at the entrance to the golf course.

SOLUTION: The consulting engineer considered using Yeomans Vertical Dry Pit Pumps, but because there was ample space, recommended horizontal pumps for easier service. Both types of pumps have the large capacity required . . . and the desired sustained efficiency.

Cost of complete station $\$24^{00}$ per home.

Yeomans has specialized in the design and manufacture of sewage pumps for 60 years. These cases have been selected from a wide range of pumping problems solved by Yeomans pumps. Yeomans welcomes the opportunity to work with your engineer in selecting the equipment which will give the greatest over-all economy in your case.

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concrete as the most critical material is solved by the simple expedient of designing "under-reinforced" elements, i.e., elements whose ultimate flexural strength depends on the strength of the prestressing steel and not on that of the concrete. Concrete of 5,000 psi has become commonplace throughout most of the United States and, in fact, throughout most of the civilized world.

Nearly 30 years ago, Freyssinet saved the huge French Line pier at Le Havre from complete ruin, which was being brought on by differential settlement, by a dramatically successful underpinning achieved by prestressing procedures. The structure has behaved most satisfactorily since then and is expected to give many more years of useful service.

All other previous attempts to stop settlement of the Le Havre pier had failed utterly. Can a more striking example of the versatility, adaptability and durability of prestressing procedures exist?

A. W. Coutris
Consulting Engineer
62 Rue Spontini
Paris 16, France

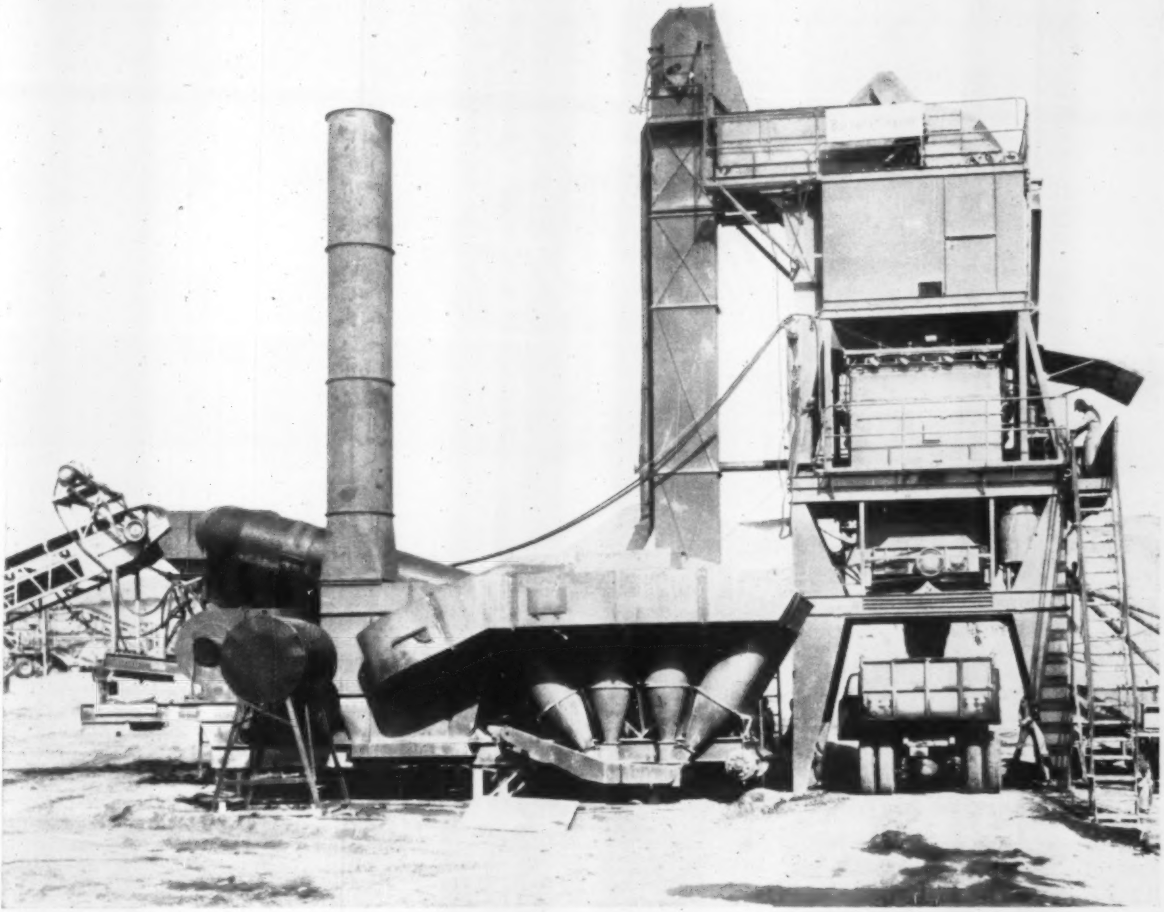
Flood Flow Formula

Sir—Your interesting article, "State Pioneers Flood Plain Zoning" (ENR May 22, p. 45), gives a flood flow formula that is new to me, although I have been interested in stream flow statistics since 1903.

Flood formulas in those days were complicated, involving coefficients with wide ranges, leaving a young engineer with the feeling that he might as well guess at the total flow instead of the coefficients. Designing the culverts for the open cut portions of the Catskill Aqueduct gave further experience, though it must be admitted that Chief Engineer J. Waldo Smith solved some of the difficulties by laying down the rule that no culvert should be smaller than 3 x 3 ft in section, to allow easy inspection.

As more actual flood flow records become available, it was evident that many of the early formulas were inadequate, particularly for small drainage areas. However, a formula proposed about 1879 by E. T. D. Meyers and somewhat revised and simplified by Clarence S. Jarvis (Trans. ASCE 1926, Vol. 89, p. 994) has been found very useful.

This empirical formula is: Multiply 10,000 by the square root of the drainage area in square miles and then multiply by a fractional coefficient varying from 0.1 to 1.0, depending on the character of the watershed. The result will



San Ore Construction Company's 6000-pound Barber-Greene Model 896 BatchOmatic, which has been set up at four widely scattered job-sites. Write for your copy of clearly illustrated *Principles of the BatchOmatic.*

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In its relatively short life this 6000-pound Barber-Greene BatchOmatic has worked on four widely scattered paving jobs. The fact that San Ore Construction Company could move this plant over the highway for these jobs is proof of the superior portability of the BatchOmatic.

The plant was initially set up at Caldwell, Kansas, where it produced mix for Sections 1 and 2 of the Kansas Turnpike. It was then moved about 200 miles to Ellsworth, Kansas, for another road project. The next and longest hop was about 500 miles to Fairplay, Colorado, for paving the upstream face of Montgomery Dam, a job that totaled only 20,000 tons. Its final move of the season was about 100 miles to Fountain, Colorado, for a highway resurfacing project.

Besides their unmatched portability, Barber-Greene BatchOmatics offer:

- Simultaneous measuring of all sizes of aggregate.
- Instant changeover from automatic to manual operation, and from manual to automatic.
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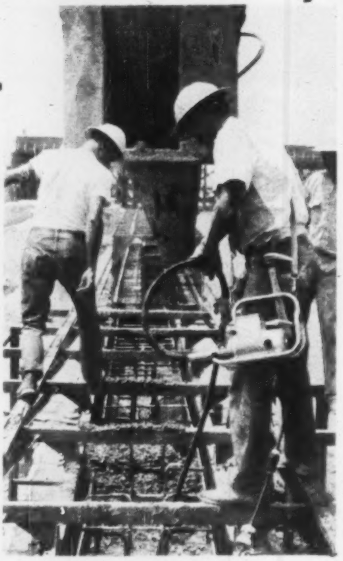
A *powerful*, universal ¾ HP electric motor gives Viberette plenty of "kick" for thorough vibration.

The 19 lb. Viberette Vibrator with new, dual grip, skid type handle makes the entire unit easy for one man to operate. A new shoulder strap attachment leaves both hands of operator free to manipulate the flexible drive.



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approximate the maximum flood flow in cu ft per second that may be expected to occur. This, divided by the square miles of drainage area, will give the unit flow per square mile.

It can be readily seen that the maximum coefficient of 1.0 applies to mountainous areas and relatively impervious slopes, while the small coefficient applies to flat areas with porous soil, in latitudes where little or no freezing occurs.

The Bigwood-Thomas formula is no doubt useful in situations like that in Connecticut, where extensive surveys can be made of the drainage areas. But where detailed surveys are not available, it is believed the simpler Jarvis-Myers formula is preferable. In addition, it gives an approximation of what may happen most any time, while the Bigwood-Thomas formula involves choosing a recurrence interval to be designed for. It must be remembered that in assuming a recurrence interval, there is no assurance that the design flood, and even one that exceeds it, won't occur within a short time.

F. B. Marsh
While Plains, N. Y.

Editor's Note: Some readers asked about the units in the Bigwood-Thomas formula, which were not given in the article. The formula is $Q = RC_nAS$, where Q is the design flood in cu ft per second, R is the number of times the mean annual flood to be designed for (dimensionless), C_n is a coefficient based on channel storage characteristics, A is area contributing to the design flood in square mile, and S is the average of the main channel slope and the average tributary channel slope in ft per mile.

Big Difference

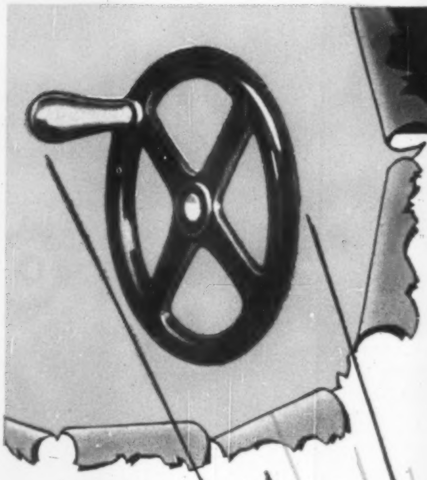
Editor's Note: The tabulation of ENR Heavy Construction Contracts by State on page 60 of the February 13, 1958, Annual Review and Forecast Issue of ENR contains a typographical error: Utah's total for 1937 is $8,162,000, not $88,162,000 as published.

CALENDAR

American Institute of Architects, annual convention, Hotel Cleveland, Cleveland, Ohio, July 7-11.

Expanded Clay and Shale Association, mid-year meeting, Cosmopolitan Hotel, Denver, Colo., July 20-21.

Hydraulics Division, American Society of Civil Engineers, seventh conference, Georgia Institute of Technology, Atlanta, Ga., Aug. 20-23.



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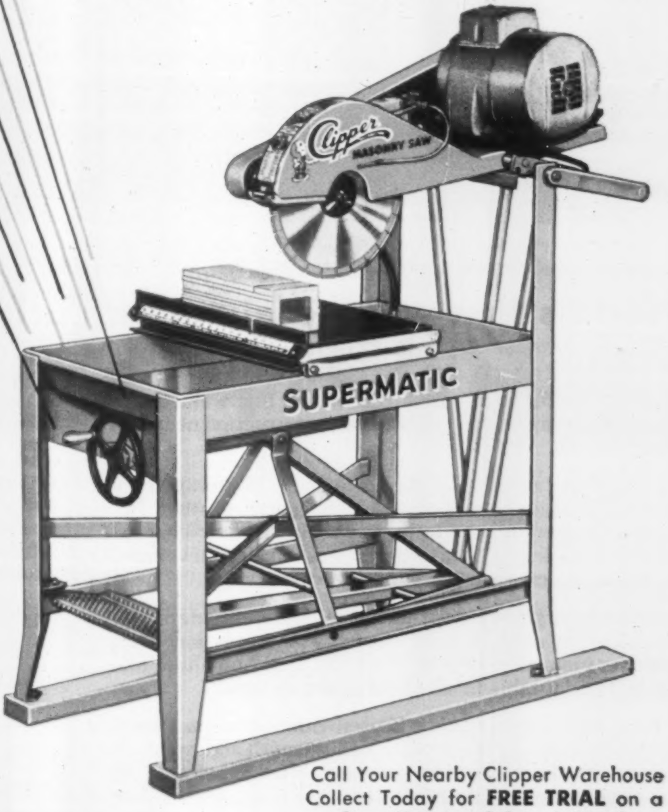

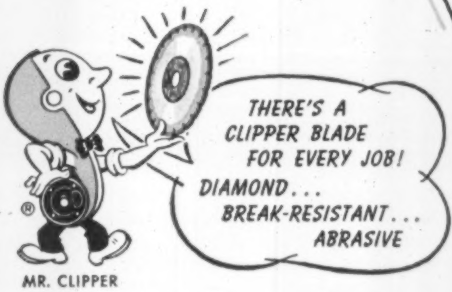
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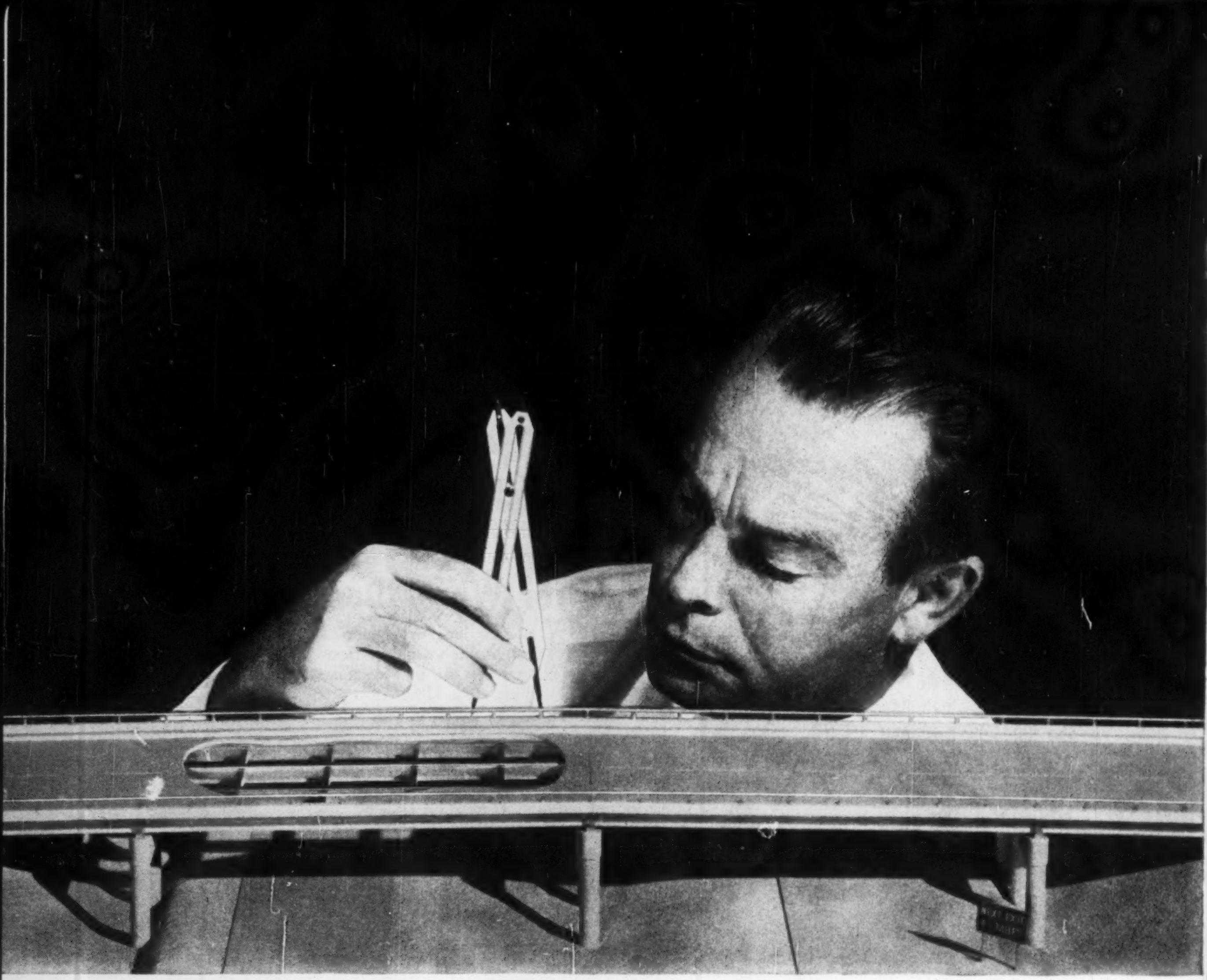

World's first welded aluminum bridge!

Another first for aluminum—the world's first welded aluminum highway bridge* now under construction near Des Moines, Iowa.

A cooperative effort of the Iowa State Highway Commission, Kaiser Aluminum, and the nation's other two leading aluminum producers, the bridge is a striking example of the many new structural uses being developed for strong, lightweight aluminum.

Aluminum girders used in the bridge eliminate costly maintenance, save on field assembly and erection costs, and offer important structural advantages. And aluminum is readily adaptable to standard bridge designs.

Alloy 5083, developed by Kaiser Aluminum, was chosen for the structure because of its high strength and excellent weldability. Huge welded sub-assemblies, fabricated by Pullman-Standard Car Manufacturing Company, will be transported to the site, elevated into position, and bolted together.

Kaiser Aluminum will gladly provide engineering assistance on any highway construction problem concerning the use of aluminum. For immediate service, contact your nearest Kaiser Aluminum sales office. Or write: Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Avenue, Chicago 11, Illinois.

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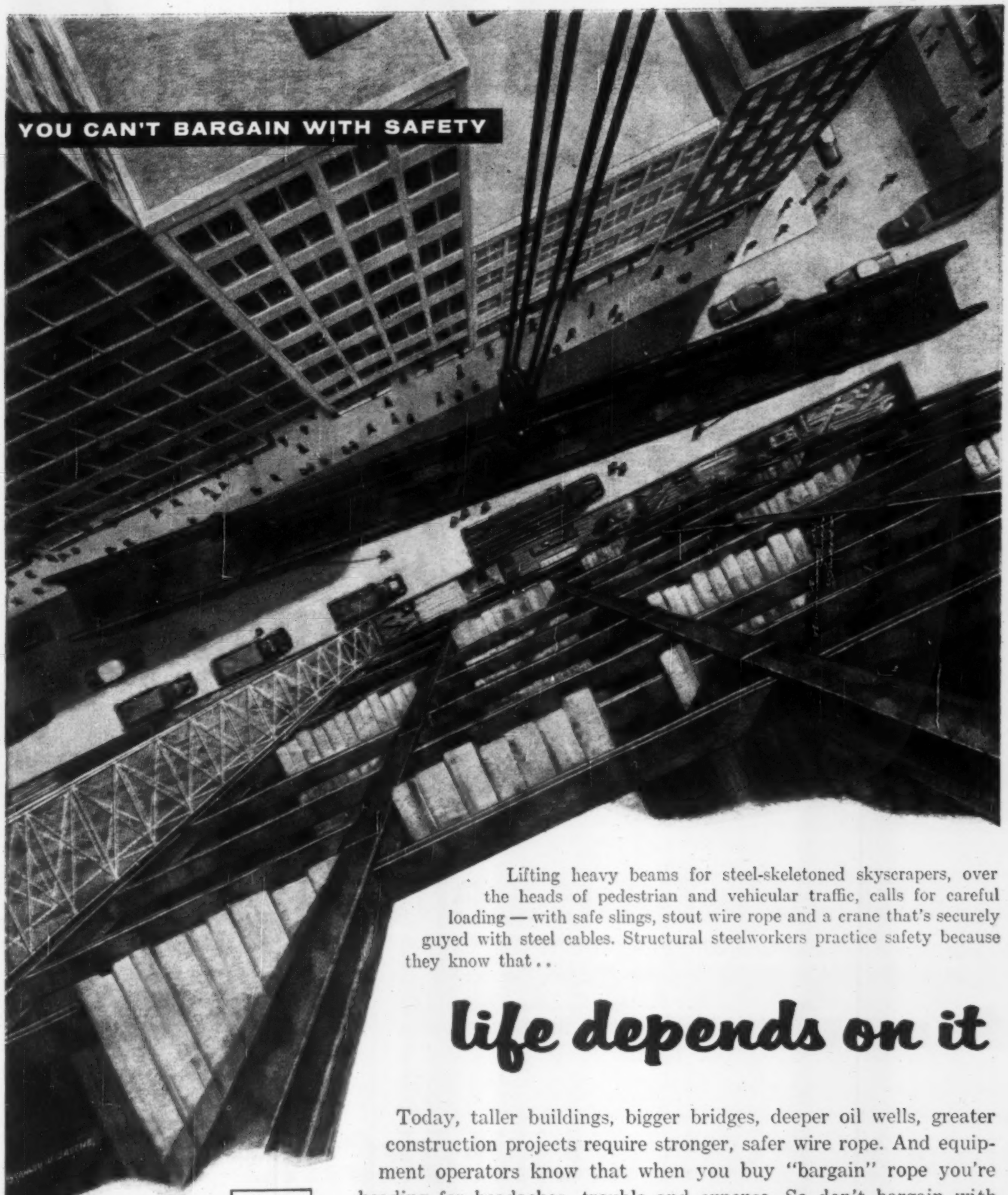

Lifting heavy beams for steel-skeletoned skyscrapers, over the heads of pedestrian and vehicular traffic, calls for careful loading — with safe slings, stout wire rope and a crane that's securely guyed with steel cables. Structural steelworkers practice safety because they know that . .

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Today, taller buildings, bigger bridges, deeper oil wells, greater construction projects require stronger, safer wire rope. And equipment operators know that when you buy "bargain" rope you're heading for headaches, trouble and expense. So don't bargain with safety. Buy wire rope on the basis of *quality*. Buy Wickwire Rope.

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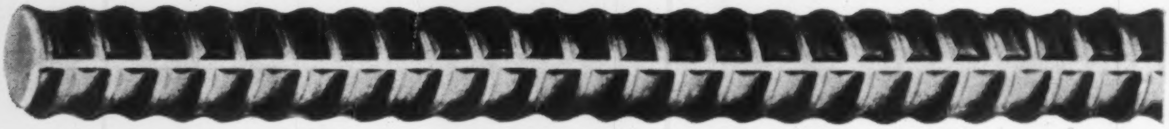

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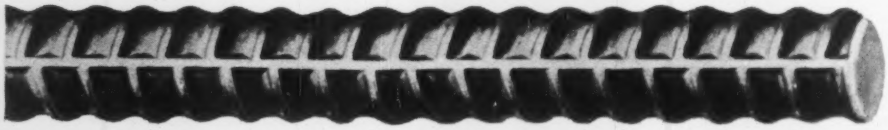

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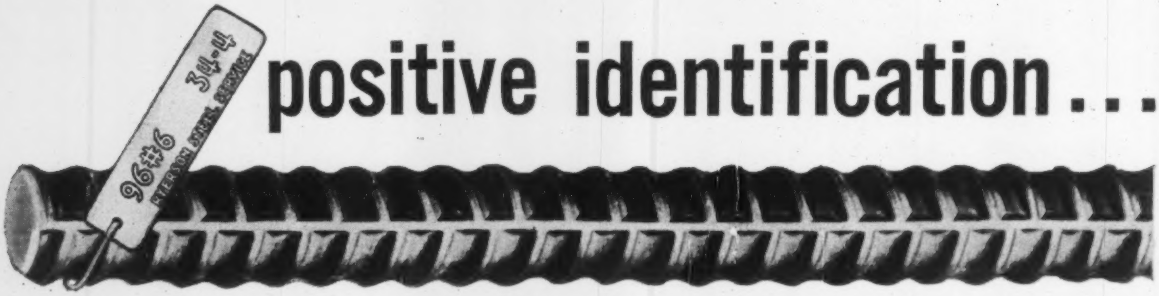

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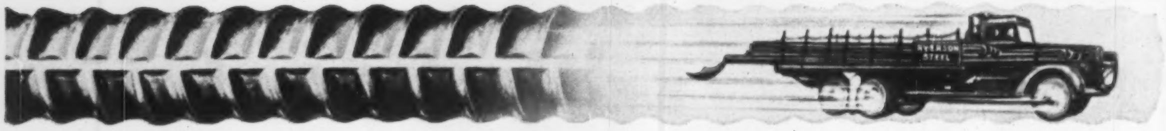

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

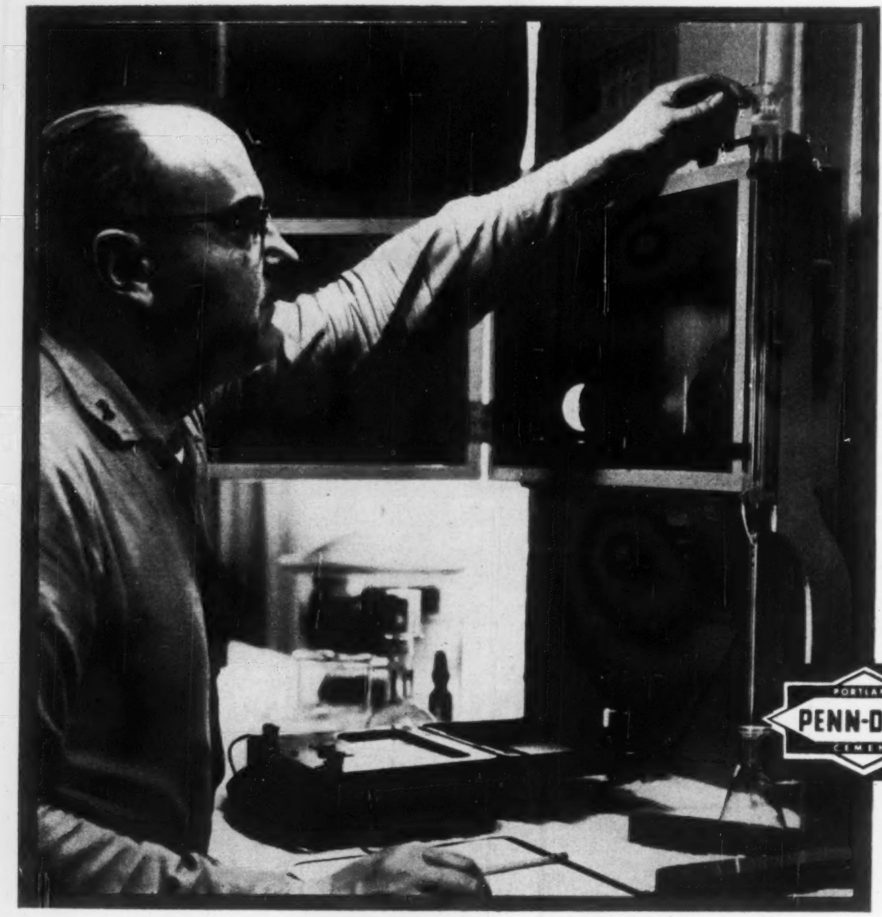
AHEAD BY A NOSE—Construction put in place in the first half of this year is valued at $22,066 million, according to a joint estimate of U. S. Departments of Labor and Commerce. It barely topped last year and set a new record in dollar volume. But physical volume of new construction put in place will probably end up short of 1957 when allowance is made for cost hikes (see p. 117). Private construction volume slipped 1% below last year's first half, reflecting the 24% drop in industrial building. Public construction offset the private drop with a 3% gain in the first half.

STATE IS NOT IMMUNE—A highway contractor who is held up in starting a job because of a delay in the removal of utility installations can sue the state for damages, a Kentucky court rules. Failure to provide a free and unobstructed right-of-way, the court says, is a breach of a binding contract made by the Highway Department and governmental immunity from suit does not apply to such a breach.

MORE PARKING GARAGES WANTED—New ordinances approved by the Chicago City Council are expected to encourage construction of privately owned parking garages in the city. Costly building requirements, such as solid walls and sprinkler systems, will be eliminated by the ordinance changes. City Hall observers say the move was made to spur Chicago Transit Authority plans to build garages near outlying stations. Several "bird cage" type buildings, instead of conventional wall buildings, already have been constructed by the city. Private interests now can build similar structures.

INNOVATIONS AT NIAGARA—While their brethen on the St. Lawrence saw the beginning of the end last week (p. 21), contractors digging in at the Niagara project of the New York State Power Authority could hardly see the beginning of the beginning through the maze of high tension power lines, highways, railroads, factories, houses and underground utilities that crisscross the site. However, they are doping out a host of new rigs and methods to cope with the unprecedented demands of rockmoving and concrete placement that will follow.

It's a good bet that the next 30 months at Niagara will see line drilling to 110 ft depths; ingenious gantry-mounted line and blast hole drilling rigs; benching of rock in lifts up to 50 ft; traveling forms to support the 4½ ft thick arch roof of the 46 ft wide, 66 ft high cut-and-cover water conduits; the world's largest aggregate plant, at 2,000 tons per hour; and, probably most significant, a large-scale cold weather concreting operation (brought on by the tight construction schedule). Niagara will be quite a show.



Penn-Dixie Cement—and the Instrument That Counts its Microscopic Particles

The technician in the picture is operating a Wagner Turbidimeter. This instrument was developed at the National Bureau of Standards as an improved method for determining the fineness of portland cement. It is in constant use at all Penn-Dixie laboratories.

A simplified description is that a light source of fixed intensity is trained on a photoelectric cell which actuates a microammeter. Between the light source and the photoelectric cell there is a glass container filled with kerosene. A definite amount of cement is suspended in this kerosene and a uniform procedure is followed to register the amount of light not obstructed by the cement particles. Variations in light intensity control the amount of current generated by the photoelectric cell. This current is measured by the microammeter according to specification, from which the fineness of the cement is computed.

Proper fineness is only one of the many factors that contribute to the dependability of Penn-Dixie Cement.

Penn-Dixie means Permanent Dependability

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WASHINGTON OBSERVER

- **A green light on defense contracts**
- **Congress: Adjournment by mid-August seen**
- **Hospital, science, depressed areas gain**
- **Drive under way on big housing bill**

• **The Pentagon wants military contracting to go ahead on schedule, without waiting for completion of Congressional action** on the defense and military construction appropriations bills.

Defense Secretary Neil McElroy has directed all services (1) to go ahead with construction and procurement projects in a "normal fashion"; and (2) to make awards planned for July even though appropriations mechanics have not been completed. The July contracting rate will be limited, of course, to one-twelfth the amounts approved in the budget.

"This is a clear-cut indication that no cutbacks are in the offing," a Pentagon official says. "We will be grinding out construction awards as fast as we can."

The Pentagon directive came in response to industry complaints that contractors were being hit by stretchouts, postponed contract settlements, and even failure to pay bills on time. Secretary McElroy feels there have been "needless apprehensions." That's why he put the Pentagon policy on paper.

* * *

• **Here are the major construction items on Capitol Hill, as Congress heads down the home stretch toward a probable mid-August adjournment:**

Aid for hospital building. The House passed, and sent to the Senate, a three-year extension of $211 million a year in matching grants for nonprofit public hospitals and related facilities. **Prospect: Passage virtually certain.**

Science education. A House committee has okayed an $826.5 million, four-year program for aid in federal scholarships, student loans and programs to stimulate instruction in mathematics, sciences and foreign languages. **Chances for action this session: Fairly good,** but it could lose a race against time when adjournment fever sets in.

Military construction. The House Appropriations Committee is still working on a money bill that probably will wind up carrying about $1.5 billion in funds for construction of missile launching bases, radar sites and airbases.

Depressed areas. A House committee has approved a bill—similar to one already passed by the Senate—for $275 million ($75 million in grants, $200 million in loans) to assist chronically depressed industrial and rural areas (see p. 116). There will be a lot of construction stemming from the program, which probably will pass Congress. **Caution: Presidential veto possible.**

Sewage grants. Democrats are pushing an increased program of federal grants—up from $50 million a year to $100 million, and increasing the size of grants to municipalities from $250,000 to $500,000. They expect Congressional approval; but **President Eisenhower may veto.**

Housing. The House Banking Committee has started hearings on an omnibus housing bill. The Senate is ready to debate a similar measure, authorizing 35,000 units of public housing (see p. 115), $2 billion for urban renewal (in a six-year span), and such other features as $400 million for college housing loans, $250 million for college classrooms and labs, and $50 million for purchases of cooperative housing mortgages by Federal National Mortgage Association. **Outlook: Some reductions, perhaps sizable, are due before passage.**

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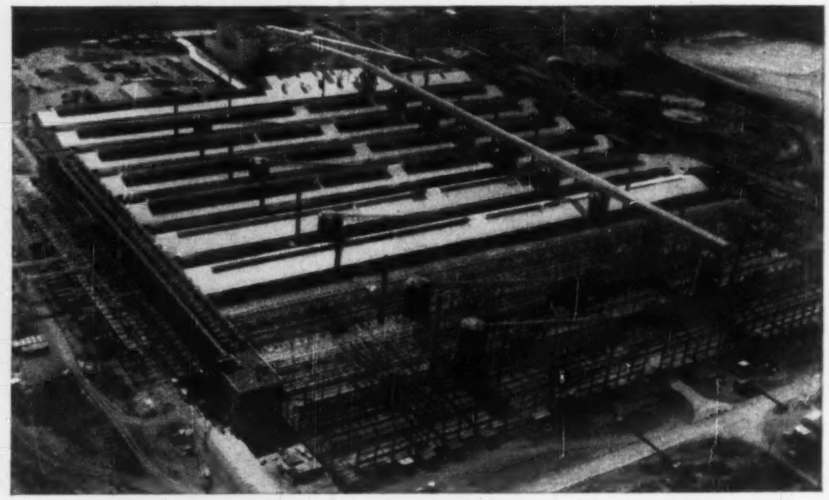
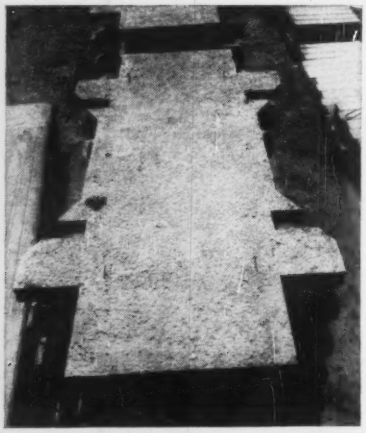
FOR "THE MODERN METAL"

Giant New Reynolds Aluminum Reduction Plant Embodies Unique Uses of Versatile Prestressed Concrete





UNIQUE FLOOR SLAB (above) "Double Hourglass" slab roughened for bond to topping is one of many intricate shapes used in Pot Room buildings.

• An unusual feature of the mammoth project for the Reynolds Metals Company, near Muscle Shoals, in northern Alabama, is the unique floor system of the nine Pot Room buildings.

These floors are prestressed concrete units set on precast columns and beams. Some 3,000 of the units are shaped into many complicated designs which made pretensioning a real problem.

The Pot Room buildings house huge reduction pots in which alumina is reduced by electrolysis. Considerable heat is generated by these pots. So to maintain comfortable floor temperatures, nearly 250,000 two-inch-round holes were provided in the prestressed floor slabs through which rapid changes of air are forced.

Over 20,000 cubic yards of concrete made with 'Incor',* America's FIRST high early strength portland cement, were used in the production of the 12,000 precast and prestressed structural units that went into the project.

Success of the over-all results achieved attest to the research, planning, and know-how of the engineering and construction staffs. Here indeed is a highly imaginative demonstration of the forward march of prestressed, precast concrete that is making construction history.

*Reg. U. S. Pat. Off.

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A Big Blast Starts . . .

. . . A Big Rush of Water

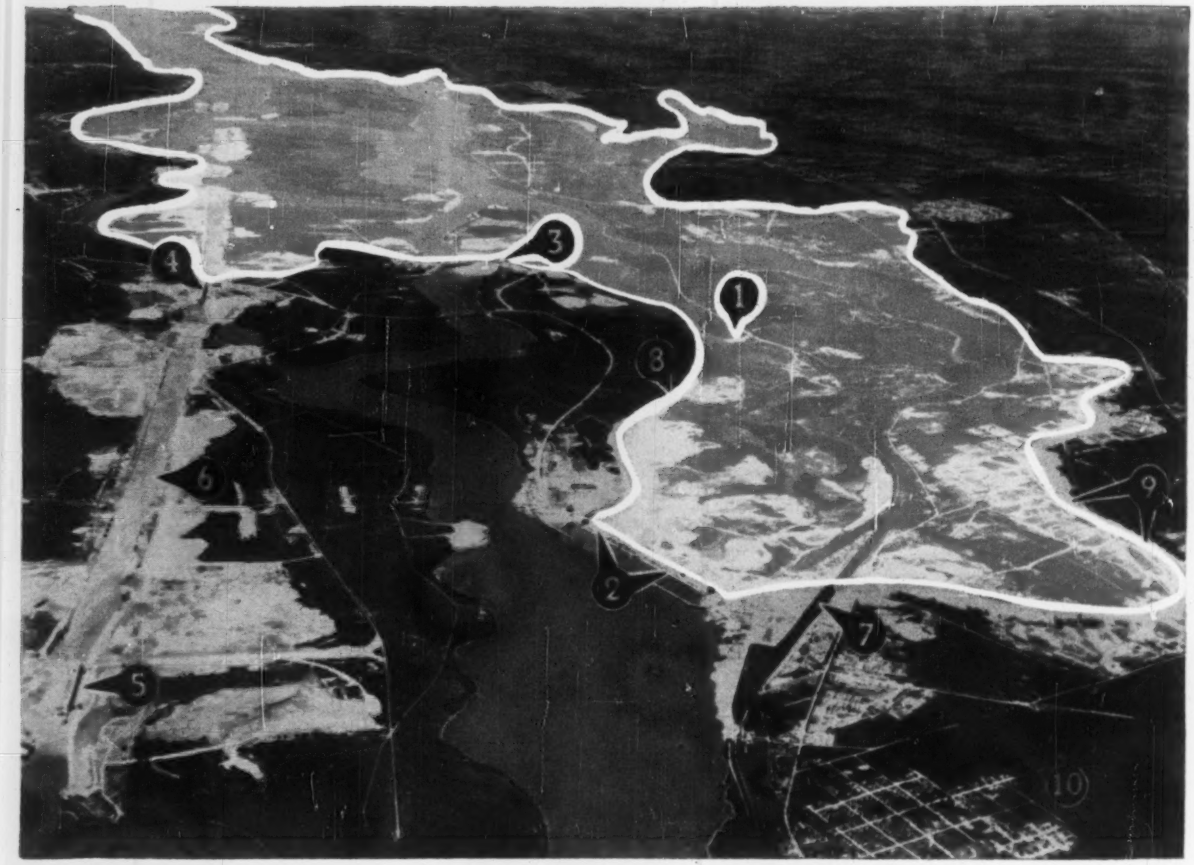
St. Lawrence Job Goes to Work

It was a booming signal of victory—a shot heard 'round the world.

The ceremonious blast piercing the last cofferdam on the International Rapids section of the St. Lawrence last week signaled that the Seaway and Power Project there was licked. Not done, just 90% completed, but most certainly licked.

Construction's battle against the elements—earth, water and weather—was won. This biggest blast of the entire job was more a publicist's fitting finale than a necessary step in the river regulation. But it boomed out the word of victory as construction men on both sides of the international project reveled in their job well done. It was July 1 and, in Canada, Dominion Day.

The great four-year river juggling



. . . St. Lawrence power pool fills; locks and dams begin operating

An earth cofferdam (1) was blasted, letting water flow behind St. Lawrence Power Dam (2) as Long Sault Spillway Dam (3) regulated the rising pool. Water in the power pool flooded Eisenhower Lock (4), Snell Lock (5) and the Wiley-Dondero Canal (6), permitting ship passage by the week's end. On the Canadian side, Cornwall Canal (7) was flooded out as the newly formed lake reached to its diked shorelines (8 and 9) to the west of Cornwall, Ont. (10).

act (never less than 240,000 cfs of water "in the air" at once) was over. The majestic St. Lawrence was given three days and three nights to build itself into a 25 mile long lake behind the power and spillway dams.

As it rose to full power-pool size, the newly created Lake St. Lawrence spread to fill the seaway canal and the locks on the New York side. And by Friday there was further official pomp plus revelry as first commercial shipping used two U. S. locks to bypass the dams. That was July 4 and, in the U.S., Independence Day.

• **First completion stage**—The wild waters of the St. Lawrence are tamed. The picturesque rapids that once boiled past Sheek Island have been replaced by the completely controlled turbulence of discharge through gates of Long Sault Spillway Dam. By September, some of this still-wasting horsepower will turn the big "wheels" of the international St. Lawrence Power Dam.

And by this time next year all 16 turbines on each side of the international border will be spinning to create the 32-unit plant's 2.5 million hp capacity from some 80 ft of head.

It will be next year, too, before the full billion-dollar story comes to a close with completion of four locks farther downstream in Canada for final completion of the Seaway. Queen Elizabeth II will be back for that celebration (she saw the work once during construction) and undoubtedly President Eisenhower will officiate with her at the final completion ceremonies.

Last week's festivities were officially the signal that the project between Cornwall and Massena has reached its "first completion stage." Gov. Averill Harriman of New York State, Canadian Prime Minister John G. Diefenbaker and Premier Leslie Frost of Ontario officiated as the power pool began to fill on July 1. Robert Moses, as Chairman of the Power Authority of the State of New York, had his counterpart in James S. Duncan, Chairman of the Hydro-Electric Power Commission of Ontario.

J. Burch McMorran and Otto Holden fired the cofferdam blast. Mr. McMorran is the chief engineer of PASNY; Mr. Holden is chief engineer of Ontario Hydro.

• **A symbolic blast**—The construction history to date of this great international project was symbolized in the historic shot Engineers Holden and McMorran fired on the north channel of the river. As the debris and water shot skyward with the force of 30 tons of explosive, these constructors were gleefully blasting a show of supremacy over the soil and river that for four years made theirs among the toughest of all construction jobs.

Skyward went the boulders and glacial till that had plagued the earthmovers. Skyward went waters of a river whose current, ice and size had taken the best the constructors could offer before finally coming under control.

This project was a match for the best the construction industry had to offer. Unfortunately, it was more than a match for the industry at the prices bid on the work. The whole four years of concentrated construction—concentrated in time as well as in space—can be looked back on by the major constructors much as committeemen review a big socially successful ball. It was run at an embarrassingly sizable financial loss.

• Tough from the start—It began in the summer of 1954 when brave, knowing contractors moved into that fast, furious water to divert its flow with cellular steel cofferdams (and the minor dumped-earth structure that had its crest blasted off last week).

It was even more rugged when winter set in. The contractor on one of these early cofferdams wound up throwing all but the kitchen sink against ice-swollen, record-high water in a physically—but not financially—successful operation. Another contractor beat and battered a 60-cell-long cofferdam across calmer waters downstream, where the power dam would be.

And as the river diversion drama began to unfold, the earthmovers were arriving in the meadows of St. Lawrence County dairy country and beginning to taste the 210 million cu yd of dense and treacherous earth they would eventually move. A 14 cu yd dragline came up from the coal country of Kentucky and shovels and scrapers began biting into the Seaway's channel. Valiant and losing battles were waged in the war against blue marine clay and heavy glacial till. But the war, eventually, was won.

• Takes shape—As the sprawling big project for Seaway and power wound up its first full year, the problems were clear-cut, but unsolved: How to move that earth for contracted prices; how to manipulate the river.

And as the work went into its second winter basic differences between U. S. and Canadian thinking on construction became evident: U. S. dambuilders made concreting an eight-month job; cutting activity in winter; Canadians, true to their tradition, enclosed their concrete-handling and worked in steam heat all winter.

The second spring (1956), and the spring after that, saw the Canadian contractor ahead on his half of the international power dam. But each year from April 1 to about December 1, the concrete would "fly" from the bigger plant on the U. S. shores. Concrete plants fed up to 8,000 cu yd per day to the four major power structures (the Power Dam, Long Sault Spillway Dam, Iroquois Control Dam and Massena Intake) on the U. S. side.

The cruel schedule did push U. S. constructors into winter concreting. They did much structural work on the powerhouse, plus paving Barnhart Island Bridge. And at Iroquois Control Dam, in the 1955-56 winter, paperboard and canvas covers went over the work, steam was hosed to clear ice off the rock and concrete went into enclosures warmed by big gas-burning heaters.

• '56 was key year—The summer of 1956 was the key season: Work was to progress far enough for a major river diversion by fall. It was "like touching a button" that April first; or like signaling a 22,000 man army back to battle against the river.

The big diversion of the river through a man-made cut and through completed gates of the spillway dam was many months late when it finally came off in the spring of 1957. But it was accomplished effectively and caused no overall damage to the schedule. It was the diversion that once and for all shut off the romantic rapids past Sheek Island and dried the northern half of riverbed for second-stage spillway dam construction.

• The race ends—In 1957, the final race to catch up to schedules was won. In the U.S., in Canada, in the power work, on the Seaway—the worried looks left the brows of the construction men. The project was in hand. The power dam began to take units; the spillway dam showed remarkable progress; Iroquois Dam, Canada's Iroquois Lock and Massena Intake were virtually done; and the two U. S.-side locks were pushed to the hardware-installation stage.

Clean-up work and mechanical installation went on in the first half of 1958; and as July 1 approached, all was made ready for storage of water. The 60-cell cofferdam came out below the power dam; the gate that would drop to cut off Cornwall Canal on the Canadian side was readied; and at the new Wiley-Dondero Ship Channel on the U. S. side of the border the St. Lawrence Seaway Development Corp. and its construction agent, the Corps of Engineers, prepared for the holiday week's visit of dignitaries from Washington, D. C.

It was a big week for what has been called the construction job of the century. And while much of the remaining force returned to work this week to finish off the project, for many the job was done.

For construction men the final chapters still to be written will be anticlimax. The St. Lawrence job is licked, in so far as work on the International Rapids is concerned.

A billion dollar construction story nears its end.

How ENR Saw Seaway Construction . . .

Here are some—not all—of the ENR stories covering construction of the St. Lawrence Seaway and Power Project:

1954

Work Starts. *Aug. 12, p. 21*
Taming the Wild Waters of the St. Lawrence. *Nov. 4, p. 24*

1955

Beauharnois Canal—Quebec's Headstart on the St. Lawrence Seaway. *Apr. 14, p. 34*
Contract Negotiated With Second-Low Bidder on Barnhart Island Powerhouse. *May 19, p. 27*
Both U. S. and Canadian awards for Powerhouse Undermine Bidding System (an editorial). *July 7, p. 96*
Two Miles of St. Lawrence Dewatered at International Powerhouse. *July 14, p. 24*
Contractor Gives Up on Lock Excavation Job. *Oct. 13, p. 23*
Housemoving in Villages to Be Flooded. *Nov. 24, p. 26*

1956

Crib-Sled Plugs Flow for Cofferdam Construction. *Mar. 8, p. 47*
Key Season Is Launched. *Apr. 5, p. 23*
Constructors Defied the Winter. *Apr. 5, p. 38*
Third Contractor Withdraws. *June 28, p 17*
Stage Set for Long Sault Diversion. *Oct. 18, p. 30*
Iroquois Control Dam Diversion. *Nov. 8, p. 27*
Key Year Ends. *Dec. 27, p. 28*

1957

Cote Ste. Catherine Lock: One Seaway Job That Stays Ahead. Feb. *28, p. 33*
Who's Right About Winter Concreting? *Mar. 7, p. 23*
How the Canadians Do It. *Mar. 7, p. 24*
Why the Seaway Needs More Money. *Apr. 18, p. 32*
Long Sault: Rapids Tamed. *May 2, p. 28*
Producing 8,000 cu yd of Concrete per Day. *May 9, p. 47*
How Much Has Seaway Excavation Really Cost? *June 13, p. 31*
St. Lawrence Blues (an editorial). *June 13, p. 92*
Air Moves Cement at Cornwall Canal. *Aug. 8, p. 48*
Bridge Raising Job Is One of Seaway's Most Complex. *Aug. 15, p. 52*
Another Montreal Bridge Raised. *Aug. 29, p. 32*
Who Is to Operate the Seaway? (an editorial). *Oct. 3, p. 128*
Race Won in 1957. *Dec. 26, p. 42*

1958

Contractors Lose on Power Project Claims. *May 15, p. 25*
What Price Prestige? (an editorial). *May 29, p. 96*

Alaska: A Construction Bonanza

Last week's vote to admit Alaska to statehood will bring no overnight miracles. However, statehood will speed its economic growth and the construction industry is slated to play a major role pushing and expanding that growth potential.

More surface transportation is among the major jobs. Lack of adequate facilities is one of the new state's most serious problems. She'll need more highways and more railroad linkage with Canada and the U. S. to realize her dream of swift economic growth.

It is still too early to tell precisely what will happen, much less say when, but a start on more and better highway construction has been made. Under terms of the 1956 Highway Act, Alaska has a special break. The other 48 states get a 90% federal contribution for construction of interstate highways. But as a territory Alaska gets a 90% contribution for both construction and maintenance on her primary and secondary roads. The other states receive only 50% aid for these facilities.

The special road aid for Alaska was voted by Congress in recognition of its unique transportation problem. The Alaskan highway network consists of about 5,000 miles—only 2,000 miles are paved.

Last week, five senators—four of them Westerners—introduced a special $66 million authorization bill for paving 1,200 miles of the wartime-built Alcan Highway. It calls for spending $11 million in each of the next six fiscal years. On the portion of the highway within Canada, the bill would permit expenditure of U.S. money for paving only if Canada pays half the cost.

The U. S. Bureau of Public Roads, which administers the 1956 act, has been serving as the Alaskan highway department. It has a staff of 1,000 and a construction fleet of some 1,500 units there. And for this fiscal year, Alaska's apportionment of federal-aid highway money is about $20 million. Last fiscal year, it was $13.1 million. However, the extraordinary relationship of BPR and Alaska eventually must end, sometime after a full plebiscite ratifies the action of Congress. But last week a bureau spokesman said he had no idea when the break will occur.

Alaska probably also will be the scene for a rebirth of railroad construction. A report on the economic and military feasibility of more rail and highway links between Alaska and Canada and the U. S. is due within the next 18 months. It will come from the Alaskan International Rail and Highway Commission, a new federal government agency. Alaska's principal railroad is U. S. owned and operates over 470 miles of mainline between Seward and Fairbanks, via Anchorage. A second line, the White Pass & Yukon, runs 110 miles of narrow gage track. It was developed by British capital.

Power requirements also will present a huge challenge and promise for the construction industry. The Army Corps of Engineers has mapped a minimum of 91 potential major power sites for possible development.

Thus far, only one federal hydroelectric project has been installed in Alaska. It is the Eklutna plant, near Anchorage, with 30,000 kw of installed capacity. Finished in 1954, it was the work of the Reclamation Bureau and cost over $30 million.

• More political strength—When the 86th Congress convenes in January, Alaska will be represented in Washington by two U. S. Senators and one member of the House. They'll have full voting rights and privileges. This will give the new state a lot of leverage immediately for getting public works projects authorized and money appropriated to build them.

Literally hundreds of such projects are conceivable in the Alaskan future. One example, the Bureau of Reclamation in 1954 reported that 12 major dams and 11 power installations might be feasible—pending further study—in southern Alaska on the Susitna River and three tributaries. The Susitna Valley embraces 13 million acres, of which only 5,000 are privately owned. The bureau's four-year-old, and almost forgotten, report foresaw the possibility of developing a million acres of farm and ranch land within the valley.

• Depends on U. S.—For all her basic strength, however, Alaska has a weakness. She is presently dependent on federal funds. Best estimates say that income from all of Alaska's private industry currently totals only about $160 million a year. Examination of the federal budget shows her economic dependency, but it does not tell the full story.

Excluding pay for military people and civilian employees of the military, the fiscal 1959 budget for Alaska is about $128 million. Figuring the military payrolls in Alaska is impossible, but about one-fourth of Alaska's 215,000 population are military transients. Some 30,000 are "natives"—Eskimoes, Aleutians and Indians.

• Where the money goes—Federal construction work takes a big bite out of the $128 million. Aside from the nearly $20 million apportioned for highway construction and maintenance, some of the major federal projects in the budget include:

- Dredging a deeper channel in Dry Pass (southeastern Alaska) by the Corps of Engineers. It will cost $846,000 to complete in fiscal 1959. Alaskans also are trying to get a start this year for an authorized Corps project to deepen Gasinteau Channel, near Juneau.
- Federal aid for airport construction and modernization, $1.3 million.
- Air navigation aids, $11.6 million (division between equipment purchase and installation not specified.)
- Among many Defense Department projects, most of them classified, is at least one missile detection site, estimated to cost more than $30 million.
- Construction of public schools, other public buildings, and street and utility projects, $5.3 million. This is the last installment in a nine year, $70 million aid program. A five year, $30 million extension is being requested.
- A 225-bed central mental hospital in Anchorage, with smaller 30-bed and 20-bed units at Fairbanks and Juneau, $6.5 million.

• Private potential—In the private construction field, one of the biggest jobs is now under way—a $55 million paper pulp mill at Sitka. Owned by Alaska Lumber & Pulp Co., it is scheduled to enter production in 1960.

The homebuilding industry in Alaska is difficult to assess. Comprehensive figures are not obtainable. The U. S. Department of Labor, which assembles these official government reports, does not get figures from Alaska. Now that Alaska is due to become a state, the department will start gathering these statistics.

The best measure available now comes from the Federal Housing Administration. The agency's figures show a steady rise. In the 24 years since FHA was established, it has insured mortgages in Alaska for $49 million on 3,342 houses. For rental projects, mortgages of $46 million on 3,852 units have been insured. Of that total, $5.9 million was for 267 homes in 1957. FHA mortgages in Alaska are 50% higher than in the U. S., because of high labor and material costs.

• Biggest asset—The area's prime capital asset is land. The U. S. government owns 99% of Alaska's 582,000 square miles. Being turned over to the state immediately will be 182.8 million acres. Alaska undoubtedly will choose millions of them as quickly as possible. But the statehood law allows her up to 50 years in which to make the final choice.

It is on development of this land that Alaska counts for her bright future. The lures are present, if they can be developed. Fishing, worth $93 million in 1956, is still the biggest industry. But Alaskans are doing some economic tub-thumping. They are trying to interest state-wide risk capital from private underwriters in other resources —oil and gas, coal, iron ore, copper, nickel, tin and forest products.

Many an Alaskan will tell you with fervent sincerity that, within a decade, oil and gas will outstrip fishing as Alaska's top industry. Right now, at least 32 million acres are under oil and gas lease.

Truck Terminal Exempted From Town's Zoning Laws

An Ohio court has ruled that a trucking firm has the right to build a terminal in a residential area near Akron, despite zoning laws to the contrary.

Freight, Inc., Akron, Ohio, is legally considered to be a public utility and, as such, is outside the scope of zoning regulations. The court opinion said: "A public utility is one that gives the general public, indiscriminately, a legal right to use its services, and such services cannot be denied or withdrawn at the whim of the owners." The trucking company is a common carrier under Ohio law and meets this test, according to the court.

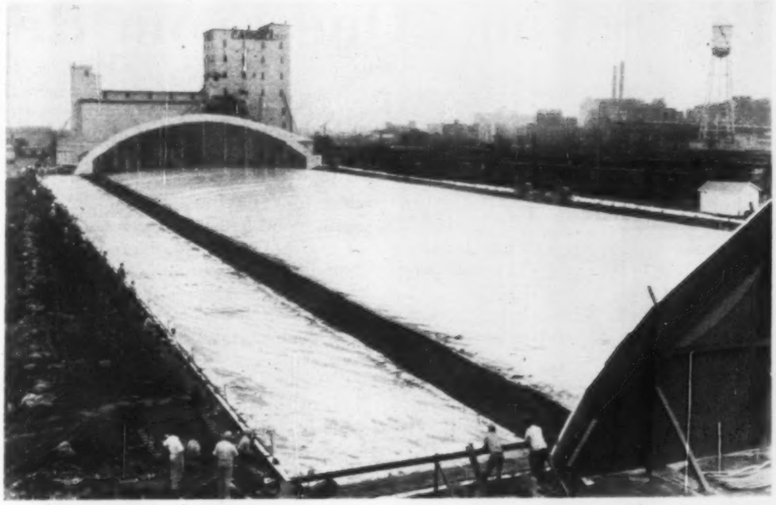
The company had announced plans for a $1 million office and terminal to be built on a 38 acre farm tract in Northfield Center Township in June 1957. Nearby residents protested the location because it's in a residential zone. The Summit County Common Pleas Court declared Freight, Inc.'s right to build as a public utility. This opinion now has been unanimously upheld by the Ninth District Court of Appeals.

A similar case awaiting the outcome of the Freight, Inc., litigation concerns Richfield Township, also near Akron, where authorities want to keep out a proposed terminal of Bender & Louden, Inc., another Akron trucking firm. The area is zoned for retail business, but not commercial.

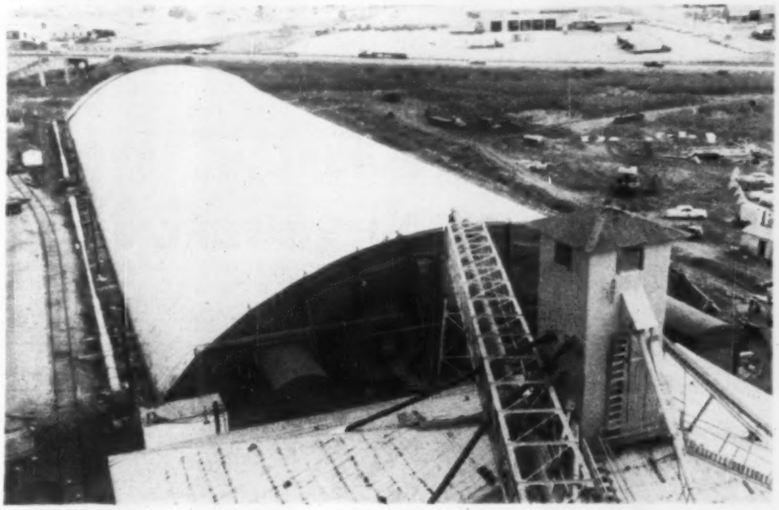
Louisville Water Data To Get H-Bomb Shelter

The city-owned Louisville Water Co. will store its critical records in a hydrogen-bombproof vault. This was revealed July 2, when bids for the shelter were opened.

The concrete vault will house and protect maps locating all water mains, valves and underground facilities. Also, microfilmed contracts will be stored in the new shelter.



Take 50 Tons of Steel, Add 25 Lb of Air . . .



Result: Two Acres of Grain-Storage Space

In a switch from the usual fabric enclosure for inflated buildings, the air-supported roof and walls of a new granary in Fort Worth, Tex., are sheet metal. The huge cover is made of 10,000 sq ft of aluminized steel. The structure is 158 ft wide, 550 ft long and 38 ft high. It holds 1.8 million bushels of grain.

Shape is maintained by inside air pressure of 25 to 30 lb per sq ft. Air locks at one end provide entry for people and vehicles.

The steel was delivered to the site as 155 separate sheets. Workmen welded them into a single airtight unit with 335,000 welds. They attached the ends by flexible seals to semicircular metal walls; one side was permanently anchored to the concrete floor slab; the other side was weighted with sand and air was pumped under the sheet through openings in the floor. As the steel balloon swelled, its sand anchor shifted but held the air in. When the structure reached full height, the sand-weighted side was bolted down.

Lee Emmert, of Dallas, was fabricator and erector.

Cargill, Inc., a Minneapolis grain and produce firm, is owner of the new building. The firm also constructed in 1934 what was probably the first full-scale inflated steel building. It was a 50x250 ft structure made of 22 gage sheets. The building was dismantled after one year because suspended grain dust inside was an explosion hazard.

Big Savings Due From Retainage Cut

Chicago City Council last week drastically reduced its retainage requirements for contractors handling municipal construction. Some sources believe the action may save the city more than half a million dollars annually.

For many years the city has deducted 15% of the money due from all progress payments to contractors. The money was held by the city until the work was finished and final payment was made to the contractor.

Under the new law, a maximum of 10% is deducted from payments during the first half of a project only, and the contractor gets back all but 2% of his contract price as soon as he completes the work.

Chicago's new policy is similar to, but even more conservative than, the one successfully followed for years by the Illinois State Highway Department. The department limits retainages to 10% of the first half of a contract. But it also, when the project is complete, pays 90% of the money retained. In addition, highway department field engineers, can include in progress payments, 90% of the value of materials delivered to, but not yet incorporated in, a project.

Contractors have long objected to the old payment policies and even some officials have regarded them as harmful to the best interests of the city. City Purchasing Agent John F. Ward, officially suggested the reduction.

The new law took effect July 2. It calls for 10% of each monthly estimate to be withheld until the first half of the project is completed. No additional money will be withheld during the last half of the job.

On completion of the work--and before computation of the final quantities—the retainage will be reduced to 2% of the total contract. After computation of the final quantities, the 2% still held by the city will be paid.

Thus, whereas formerly a contractor had 15% of his contract's value tied up until final payment, now he has only 5% tied up at the completion of a job and this is immediately cut to 2%.

The reduction in retainage will be given only by Chicago Public Works Department. The Chicago Park District, which withholds a flat 15% from estimates, and the Metropolitan Sanitary District of Greater Chicago, which retains 12½% told ENR they do not expect any changes in their payment policies.

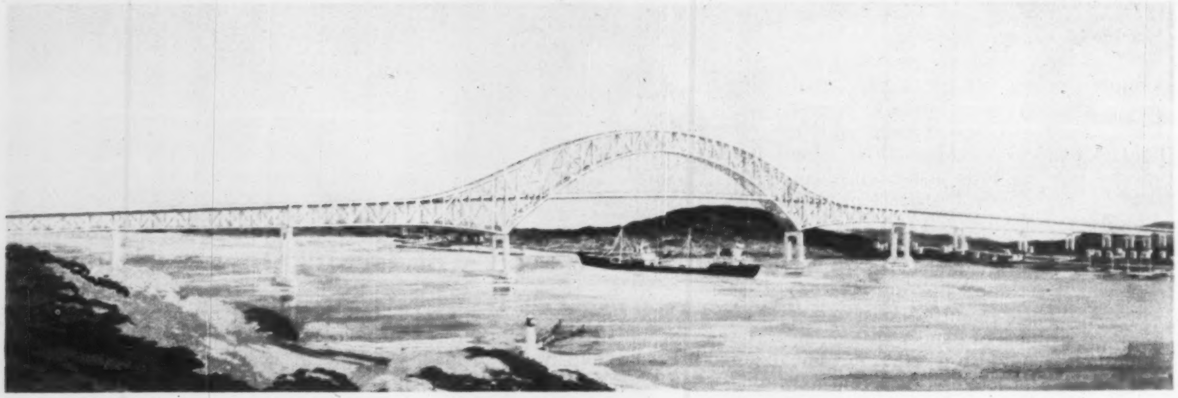
Engineers in the Public Works Department have wanted a reduction in retainage for some time. They are confident it will save the city money without increasing the danger of contractors not finishing their jobs.

"Most jobs that are going 'sour' do so at the outset;" says Deputy Purchasing Agent, Richard B. Berry. "The new system still provides for a 10% retainage in case this happens. Then when the job is over the hump, the reserve will remain constant."

From the contractors' standpoint, the new ordinance means they will not have to arrange for as much credit or borrow as much money to finance construction operations. And they can take on more work without increasing their present resources. It is also expected that many contractors, who would not or could not bid in city work, will now take an interest in it because of the new policy.

In any event, city officials are confident the increase in competition and contractor savings that will result from the new plan will mean lower prices for city work.

Just how much will be saved by the city is anybody's guess. Some unofficial estimates put it as high as $500,000 a year. A survey made last year by ENR on how slow payments hurt contractors and push costs up (ENR Oct. 17, 1957, p. 293) indicates that this figure may well be conservative. (See editorial, p. 132.)



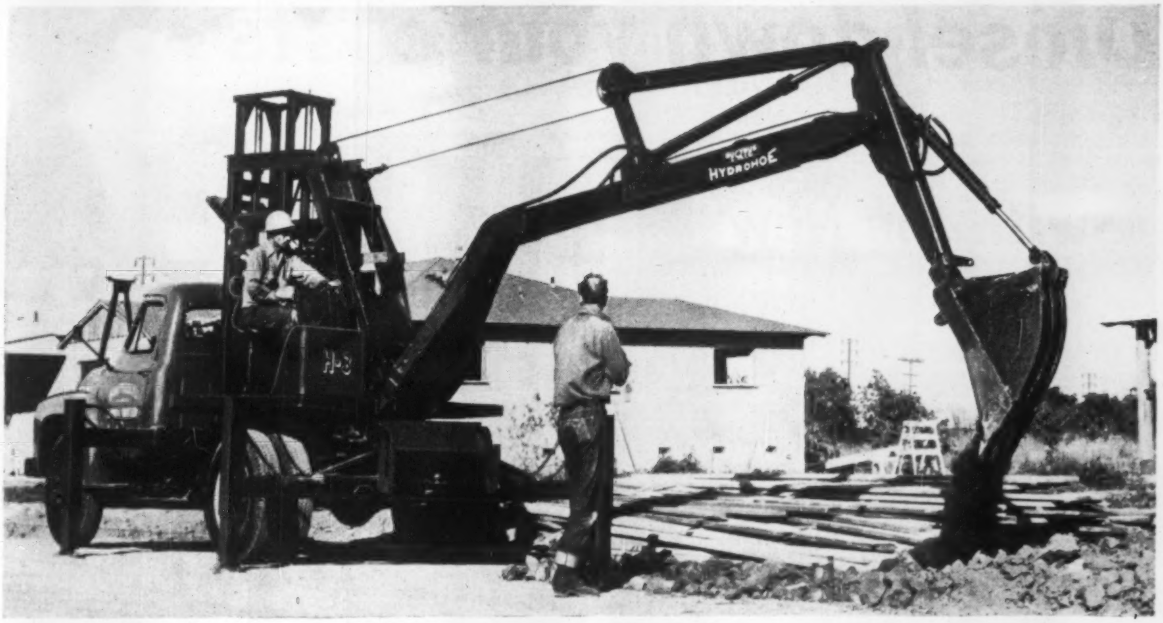
$20 Million Bridge to Replace Panama Ferry

The Panama Canal Co. will soon start construction of a $20 million high-level, steel truss, arch bridge (pictured) across the canal at Balboa. It's the result of a 1955 treaty between the U.S. and Panama.

The new structure, will replace a ferry currently in operation. It will clear the channel by 201 ft above mean high water, and will be 6,200 ft long, including approaches. The main part of the structure will be a three span unit 2,240 ft long. The central span will be 1,120 ft long. The side spans will be 560 ft long.

Svedrup & Parcel Engineering Co., St. Louis designers of the bridge, expect by using open cofferdams it will be possible to put most of the pier foundations on rock. However, piles will be required on some of the piers at the east approaches.

The accepted design was one of three submitted by Svedrup & Parcel for consideration by a board. of consultants named by the governor of the Panama Canal Zone. When the structure is completed, it will be the second bridge across the canal on the Pacific side. The other structure is at Miraflores Lock.



Combining boom telescope with three digging motions, this H-3 Hydrohoe cuts through brick-hard adobe to dig a water line trench at Montebello, California.

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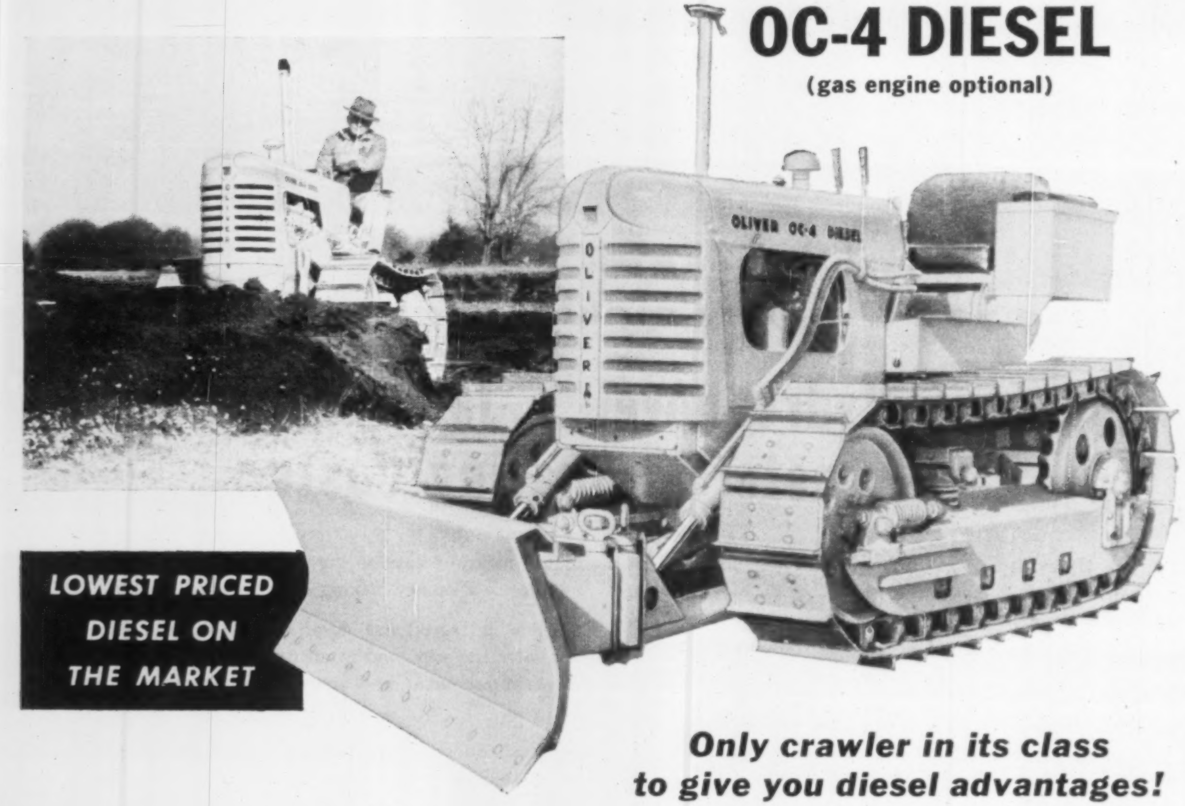

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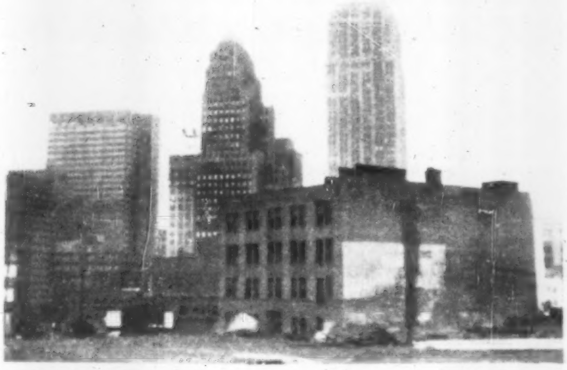
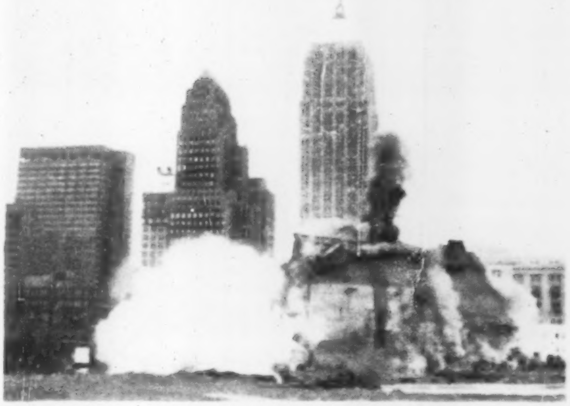
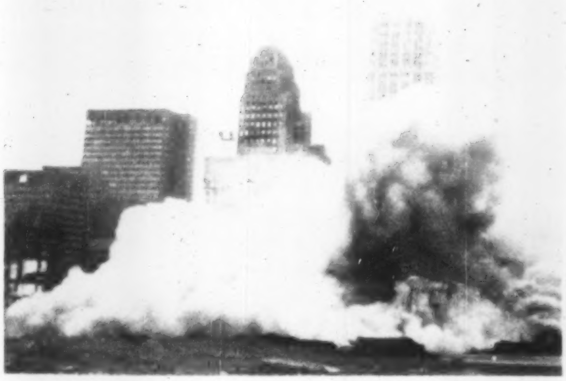


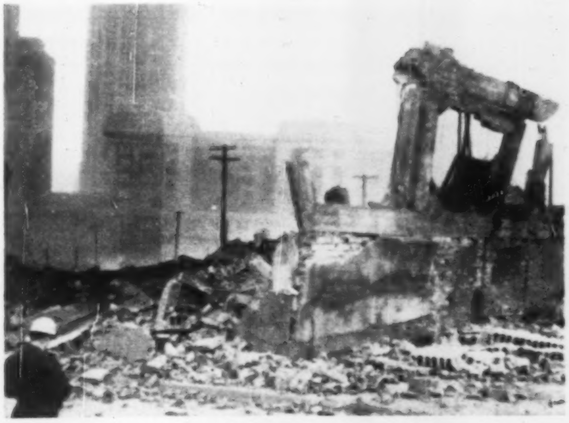
Building charged with dynamite . . .



Explodes in a cloud of smoke . . .



Structure begins to crumble, collapse and . . .



Ten seconds later only rubble is left.

Arizona Asks Licenses for Grand Canyon Dams

Following through on promises to build its own dams on the Colorado River, the State of Arizona Power Authority has asked the Federal Power Commission for a license to build a $162 million low dam in Bridge Canyon below Grand Canyon National Park. In addition, Arizona asked license to build a $128 million dam in Marble Canyon, just below Glen Canyon Dam, as soon as the Bridge Canyon Dam is completed.

Arizona's motive is to beat the City of Los Angeles to the punch. Los Angeles has filed an application to explore the Bridge Canyon site.

Harza Engineering Co., of Chicago, consultant to the Arizona Power Authority, says the third step development of the Middle Colorado could be construction of a dam at Prospect Canyon, above Bridge Canyon.

• **High dams**—The proposed Bridge Canyon Dam would be 450 ft high and have an installed capacity of 440,000 kw. It would impound 650,000 acre-ft of storage.

Marble Canyon Dam would be 400 ft high, backing water to Glen Canyon Dam, now under construction on the northern border of Arizona. It would store 324,000 acre-ft and have 340,000 kw of power capacity. Prospect Canyon Dam would be 300 ft.

In addition, Arizona would build a $12 million silt control dam on the Little Colorado River.

Harza's executive vice president, E. Montford Fucik, said power production from Bridge and Marble Canyon Dams would cost about 3 mills per kwh delivered in the Phoenix area. This compares with present Phoenix-area costs of 6 mills for a modern steam plant, 4.5 mills for Hoover Dam power and 4.75 mills average for Davis Dam power. (Arizona law, however, requires that public power must be sold in Phoenix at prices competitive with other power, so savings in power costs won't go to the consumer. They'll go to subsidize irrigation and other water developments.)

Arizonans are fearful that the City of Los Angeles or the State of California will monopolize Colorado power potential unless the state acts to construct its own power facilities.

J. Clyde Wilson, APA chairman, says the projects would be financed by revenue bonds and be repaid out of power revenues.

Before asking permission to build the dams, Power Authority officials met with representatives of Arizona public and private utilities and obtained their support in the license request.

Now 70% of all concrete highways are

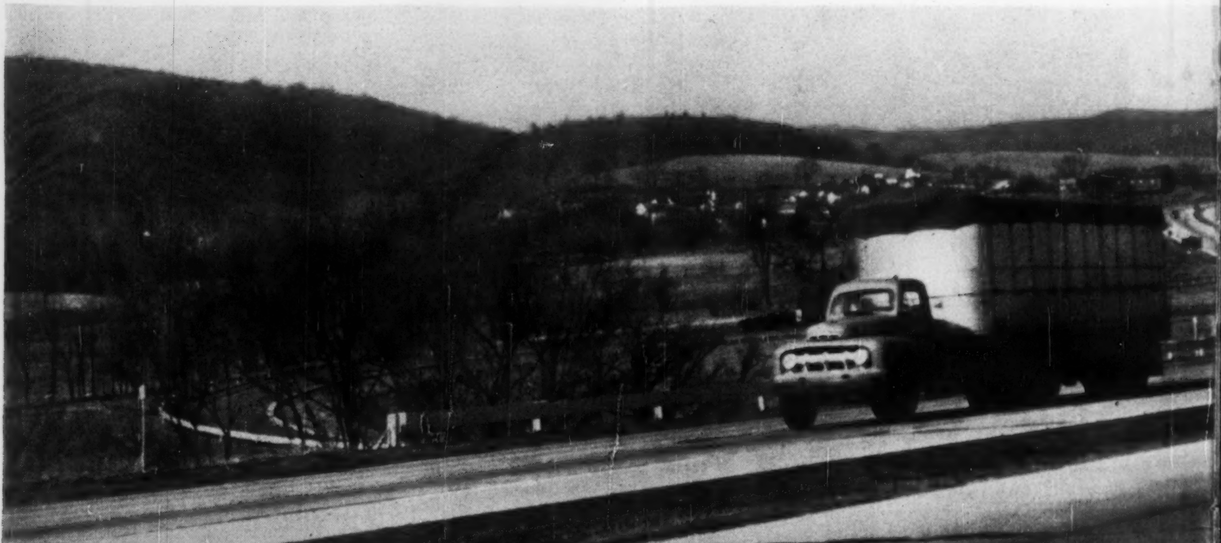
Steel reinforcement in portland cement concrete is now required for highway construction in 23 states. These 23 states account for more than 70% of all concrete highway construction!

HERE'S WHY:

Safer driving—Welded wire fabric reinforcement holds together the edges of hairline cracks which may appear in concrete slabs. It protects highways . . . prevents the appearance of dangerous and unsightly breaks in pavement. Adequately reinforced concrete roads provide smoother riding . . . safer driving for our motorists.

Longer road life—Highways last longer and require less maintenance when they are strengthened with quality steel reinforcement. American Welded Wire Fabric reinforcement adds 30% to the strength of concrete slabs. And it adds years of maintenance-free highway service.

Future traffic—The next few years will bring a tremendous increase in the traffic load on our expanding highway system. And roads will need, more than ever before, the extra 30% of strength that American Welded Wire Fabric adds to concrete slabs.



ALWAYS ASK, *"is it Reinforced"*

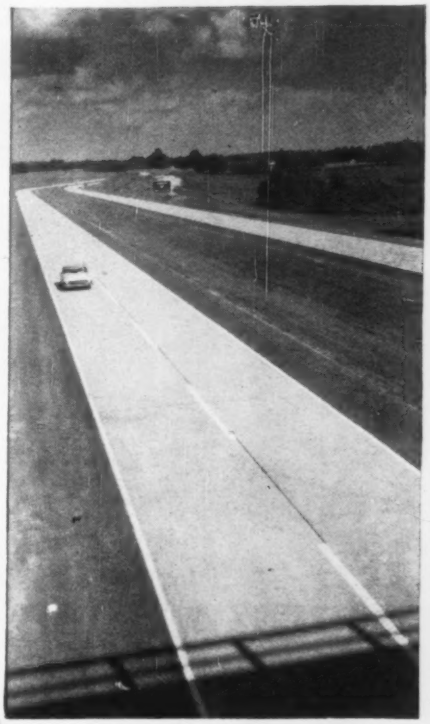
USS American Welded Wire Fabric

reinforced with steel !

HERE'S THE BRAND TO BUY:

American Welded Wire Fabric is made of *extra-strong* cold-drawn wire, electrically welded into a tough network of steel. Spacing is precise; joints are strong; and the product is rigidly inspected . . . quality-controlled from steel to finished fabric. Be sure your roads are built to last with American Welded Wire Fabric reinforcement. Send today for our new booklet: American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio.

USS and American are registered trademarks



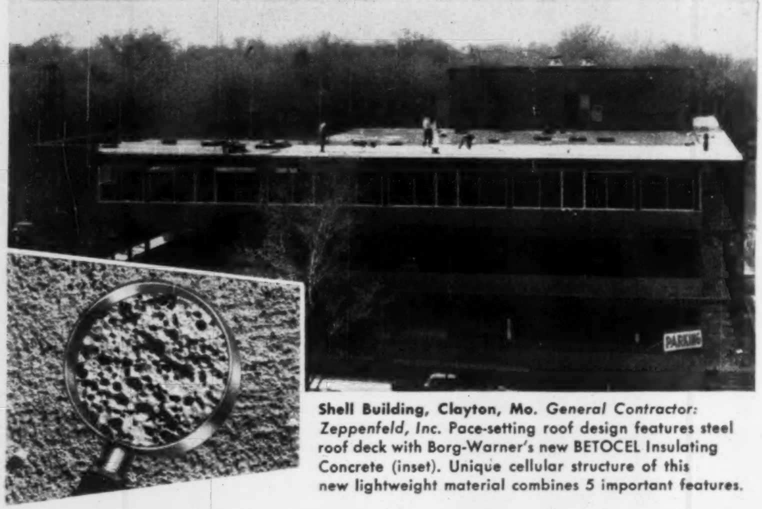
THE INDIANA TOLL ROAD is *permanently* reinforced with American Welded Wire Fabric. American Welded Wire Fabric provides safety and long, dependable service for most of our other superhighways, too, including the Pennsylvania Turnpike, the New York Thru Way, the Ohio Turnpike, and the new Connecticut Expressway.

STEEL REINFORCEMENT is an important construction feature in most of America's new toll highways. American Welded Wire Fabric adds 30% to the strength of concrete slabs . . . provides permanent crack resistance . . . reduces the need for maintenance. And it's prefabricated for quick, easy installation. Whether you're building a turnpike or a city street, specify the finest in steel reinforcement—American Welded Wire Fabric.

American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

Send NOW for full case study . . .



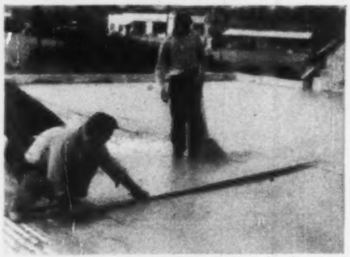
Shell Building, Clayton, Mo. *General Contractor: Zeppenfeld, Inc.* Pace-setting roof design features steel roof deck with Borg-Warner's new BETOCEL Insulating Concrete (inset). Unique cellular structure of this new lightweight material combines 5 important features.

5 reasons why this roof wears a new kind of insulating concrete

Problem: In selecting a suitable roof insulating fill for the new Shell Building, Clayton, Mo., five distinct factors were considered. **(1)** Efficiency, of course, was essential. But due to the type of construction planned, the material had also to afford **(2)** 100% fire resistance, **(3)** high compressive strength, and **(4)** low moisture content. **(5)** Cost, too, was a factor.

Solution: After a careful analysis, the material chosen was BETOCEL Cellular Insulating Concrete, the new lightweight fill from Borg-Warner.

Results: Physically, only BETOCEL could meet the three-fold requirement of strength, fire resistance and low moisture content. Thermally, BETOCEL contributed to an overall "U" value of a remarkable 0.09. Yet its installed cost was competitive with every other material considered! Better in 10 distinct ways, BETOCEL Insulating Concrete may offer important benefits for *your* next roof or floor job. Get full details now by returning the coupon below.



Quickly, easily installed. BETOCEL in its wet form has the smooth consistency of thick malted milk. The ideal fill for wet-poured roofs and floors, it's the only lightweight concrete giving you all these wanted features:

- **Controlled density:** 20 — 75 lbs./cu. ft. You get what you specify!
- **High insulating value:** best ever offered in an insulating concrete
- **Highest compressive strength**
- **Resistance to fire and moisture**
- **Unmatched installation economy**

DISTRIBUTORS WANTED

Some choice territories still available. Inquire today.

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CELLULAR INSULATING CONCRETE

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A subsidiary of Borg-Warner Corp.
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Please send me:
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☐ complete A.I.A. File
☐ BETOCEL sample
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City____________________State_________
8452

Plastic Pressure Pipe

First big city approves Use for water service, but AWWA is not sure yet

Use of plastic pipe for street-to-house pressure water service was approved last week by the Cleveland Board of Building Standards and Building Appeals—the first such move by any large municipality. But it may be two or more years before such installations will become a reality.

The approval given by the building board was not sanctioned by the City Water Department, which has the final jurisdiction on whether plastic pipe is actually used.

A spokesman for the water department says it will withhold acceptance of plastic pipe until it has the approval of the American Water Works Association. (However, Water Commissioner Frank Schwemler retired last week; his successor has not been named, but his stand could conceivably be reversed by a new commissioner.)

As to AWWA approval, Raymond Faust, assistant secretary of the waterworks group was asked by ENR if this latest development has been brought to his attention. Nothing official had yet been submitted to the association, but Mr. Faust says that plastic pipe will not be approved right away.

Plastic pipe is now being approved solely for experimental uses because there are many problems that must be ironed out, according to the association. Standards for plastic pipe and plastic material for water supply use are still being sought. AWWA and the American Society for Testing Materials are working together to formulate these essential standards. But this work may take two years to complete, says Mr. Faust.

Approval by the Cleveland Board of Building Standards means that plastic pipe can now be used legally inside a building or beyond a building, but not between the building and a water main without the approval of the water department.

One pipe distributor in Cleveland, now dealing mostly in copper pipe, says he would "be glad to replace copper with plastic if plastic will do the job. If it does, it will have big advantages."

J. W. Owings, sales manager of Republic Steel Corp. says: "We are just as much interested in selling steel pipe as ever. But the particular application in this case, in our opinion, gives plastic pipe the edge by a wide margin. From the standpoint of the contractor, the installing workmen and the user, plastic pipe is the ideal choice for street-to-house water lines where high pressures are not involved."

BIG PROJECTS PROVE IT!

Firestones deliver lowest cost-per-hour service!

From the New York Thruway to Montana's Hungry Horse Dam, contractors using Firestone off-the-highway tires are making new records for long hours of tire service and slashing tire maintenance costs. One big reason is new Firestone Rubber-X—the longest wearing rubber ever used in construction equipment tires.

Another reason is because the combination of Firestone Rubber-X with exclusive Firestone S/F (Shock-Fortified) nylon cord body gives you the strongest, most serviceable off-the-highway tire built today—a tire that beats downtime resulting from rapid wear, cuts, snags and impact breaks—a tire that keeps your equipment rolling on the toughest haul or on the tightest schedule.

See your Firestone Dealer or Store and ask the Firestone Tire Expert how Firestone *tubeless* or *tubed* nylon off-the-highway tires can cut your tire costs. When you order new off-the-highway equipment, always specify Firestone tires.

GIANT TIRE SERVICE
Firestone
GIANT TIRE SERVICE

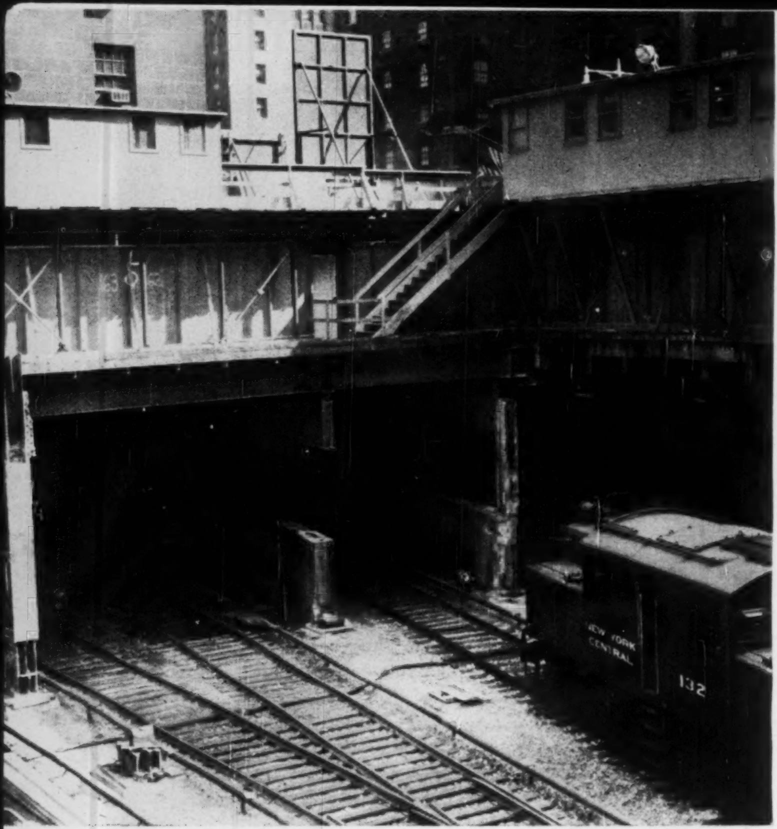
FIRESTONE ON-THE-JOB SERVICE— Unmatched Firestone off-the-highway tire service cuts costs, keeps equipment rolling to keep all jobs on schedule.

Firestone

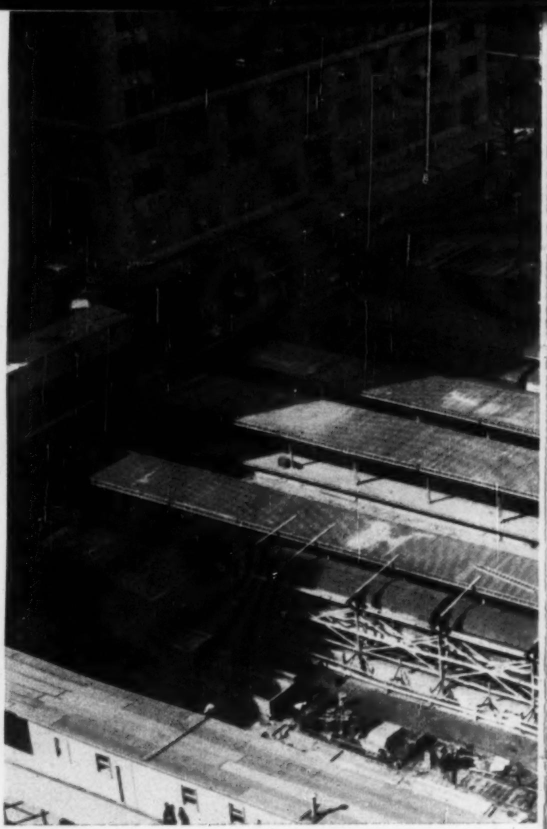
BETTER RUBBER FROM START TO FINISH

Copyright 1958,
The Firestone Tire & Rubber Company

TUBELESS OR TUBED
ROCK GRIP WIDE BASE® ROCK GRIP®



Trains ran as usual in New York City during . . .



Foundation construction amidst tracks of

Skyscraper Sprouts Through

Donald Byrne
Project Engineer
George A. Fuller Co.
New York, N. Y.

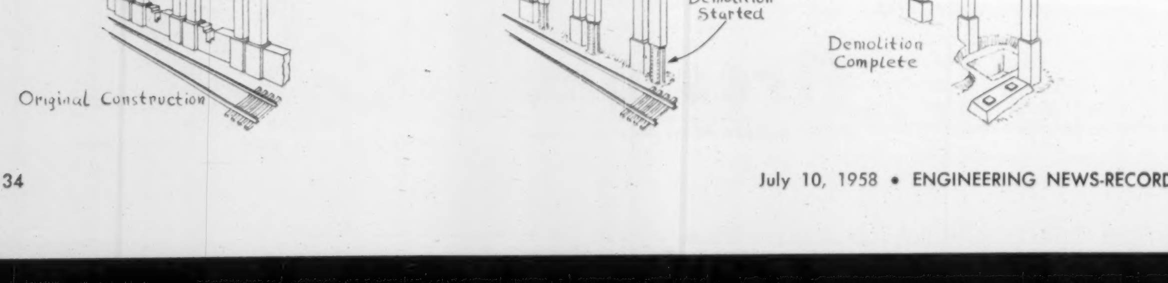
One of New York City's most complex foundation jobs is nearly completed. The project is the Union Carbide Corp's new 52 story headquarters at 270 Park Ave., on the city's fashion row of office buildings.

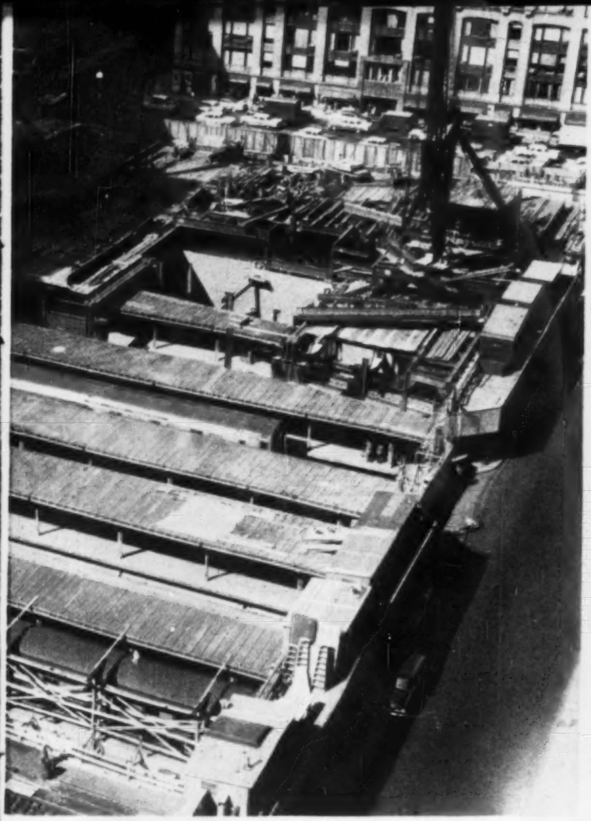
Three-quarters of the glass and stainless steel building will sit over the complex railroad track network of Grand Central Terminal. Trains use a four-track tunnel (beneath Park Ave.) to get in and out of the terminal. A half mile north of the terminal the tunnel starts to fan out—to the sides and into a two-level system. The new building sits over the widest part of this tunnel.

• Highest bolted frame—The new headquarters occupies the entire block between Park Ave. and Madison Ave. from 47th to 48th St. on the site of the old Hotel Marguery. The building will climb 700 ft without setbacks from a plaza on the Park Ave. side. This height will set a record for bolted-frame buildings. The ground level will be an exhibition area with escalators running to the main lobby on the second floor. The tower, occupying the front third of the site, will be backed by a 12-story section on the Madison Ave. side. Cost of the project was estimated at $40 million.

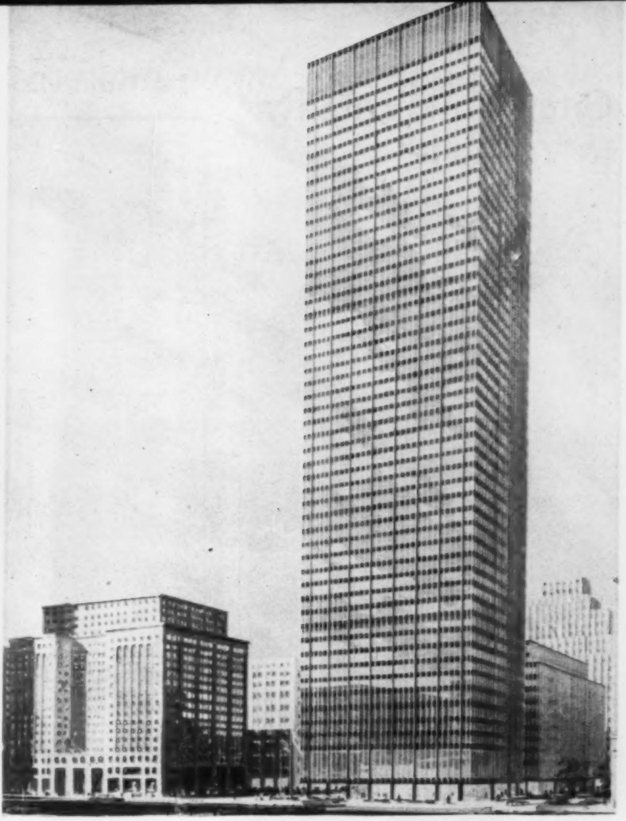
The building's curtain wall will have fixed glass windows framed by black stainless steel spandrel panels and column covers. The steel coloring process

The switch from old to new . . .





New York Central Railroad for . . .



Union Carbide's new 60 story headquarters.

Railroad Terminal Tracks

will give a textured matte finish to the panels, which is expected to reduce building glare and reflection. Bare stainless steel mullions, running uninterrupted from street to roof, will accent the black paneling.

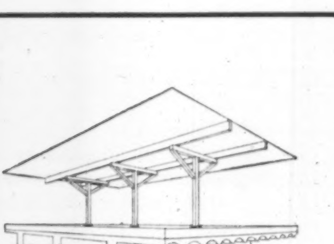
• 550 trains a day—Below the street, the tracks carry nearly 550 trains in and out of Grand Central every day. Work was planned so that there have been no interruptions due to the construction.

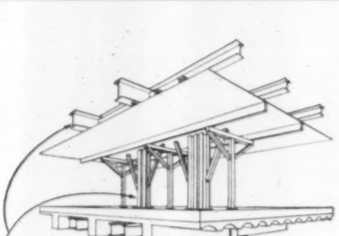
The Hotel Marguery was a steel frame, cinder concrete structure with a brick facade. Demolition of the ground floor and the hung concrete ceiling beneath was complicated—it was directly over the upper track level. Before demolition started, a ceiling of fireproofed wood bents and metal decking was installed as protection for passengers and trains on the upper level.

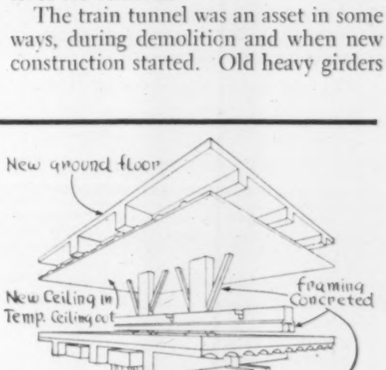
Careful planning and timing of the work were necessary to maintain normal movement of trains. A construction timetable was prepared with detailed drawings that showed each step of the operations and the order of performance. Everything was labeled carefully to insure the right procedure in the track maze below street level. "Cut Here" and "Don't Burn This Beam" signs covered the work area.

Four guy derricks and two truck cranes removed the debris and steel of the ground floor and hung ceiling. The material was loaded into trucks at street level for removal.

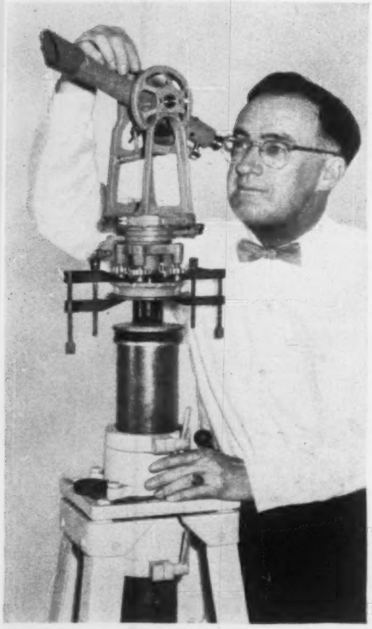
The train tunnel was an asset in some ways, during demolition and when new construction started. Old heavy girders







Cites White's ability to "rough it"



Bert Heuvelman, President, Instrument Sales, 3947 W. Lawrence, Chicago —Shown adjusting a David White T8200 Contractors' Transit.

"The real value of a surveying instrument lies in its ability to 'rough it,'" says Bert Heuvelman, President, Instrument Sales.

"It must be able to absorb extremes in temperature and weather and continue to serve dependably and accurately.

"It has been my experience that David White instruments are made with standards of precision and ruggedness that far surpass those needed to meet job requirements. The customary annual maintenance keeps them good as new."

The David White Instrument Company has been making highest quality surveying and optical instruments for over 50 years. You can be sure "the sight is right with a David White."

Write today for your free David White surveying instrument catalog. Or see the complete line of David White instruments at your blueprinter, or lumber, building supply or hardware dealer.

DAVID WHITE

INSTRUMENT COMPANY

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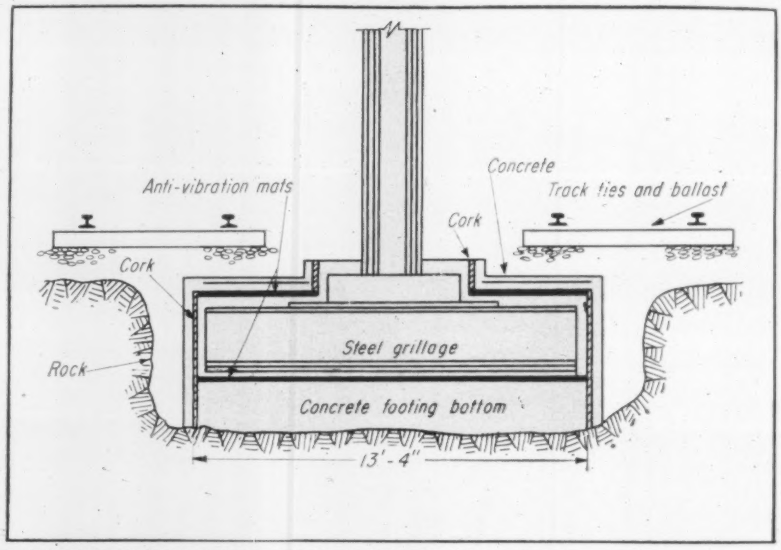
. . . Train vibration was a problem



CUSHION DESIGN of footings keeps building free from all train vibration.

that spanned over the tracks were lowered with hydraulic jacks onto flatcars for easy removal through the tunnel. Column steel below street level, crash walls running between the tracks and the debris from the lower level were loaded onto gondolas and flat cars and taken out the same way. In later construction, much of the structural steel for use below street level was brought in through the railroad tunnel.

A deep brick wall forms the west boundary of the underground track network. Beyond this wall the site had to be excavated to the required new grade, as in any ordinary building. The contractors made the most of the situation by punching an access hole through the wall. Spoil from the excavation was dumped by front-end loader through the hole directly into gondolas parked on the near track.

In the railroad tunnel, rock drilling for the new footings started on each column line as soon as the Hotel Marguery foundations were demolished. The new footings were designed for 40 ton psf bearing. More than 1,000 cu yd of rock had to be removed for them. Blasting was ruled out because of the danger of damaging the existing terminal foundations. The rock excavation was slow, tough work.

- **Footings cushioned**—Like all other buildings over the terminal's tracks, Union Carbide's headquarters is completely separated from the vibration of train activity. Open joints between wall base and ground level do the job. This separation is carried all the way down to the footings.

On the Carbide job, antivibration mats separate steel column grillages from concrete footing bottoms. These mats have a 12 gage sheet steel core with ⅜ in. layers of asbestos on top and bottom. This is all enclosed in a ⅛ in. thick jacket of pure lead. The edges are sealed with lead while the entire assembly is held in a press at 200 psi pressure.

Footing construction was concrete footing bottom, antivibration mat, then steel grillage for the column. After the column was set, concrete was poured over the grillage mat, followed by another antivibration mat. A final layer of reinforced concrete protects the assembly. Directly above this is the track ballast. The footing sides and column ends are isolated from vibration by vertical sandwiches of concrete with high density cork centers.

Structural steel erection began at the west side, outside the track network. When steel was installed up to ground level, the steel contractor erected two rolling traveler derricks to handle tunnel steel. As the steel erection moved east over the tunnel, the travelers were moved on rails out over the steel they had just placed. When the substructure steel was completed at the east end of the site, the travelers were dismantled and removed.

Below street level, fireproofing of the new steel and restoration of the reinforced concrete crash walls are scheduled for completion by the end of this summer.

Architect for the project is Skidmore, Owings & Merrill. Consulting engineer is Syska & Hennesey. George A. Fuller Co. is the general contractor. Joint venture for the foundation work is Crimmins-Lipsett. All are New York City firms.

Now being told on the inside...

THE
BLUE
BRUTE
ROTARY
STORY

all about the 5 big benefits of the
portable compressor with the
exclusive over/under design ☞

WORTHI
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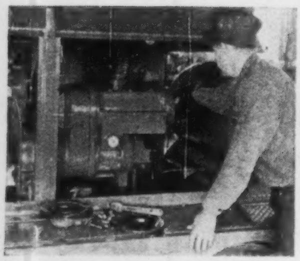
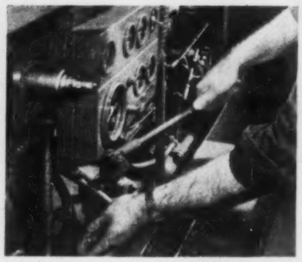
ROTARY COMPR

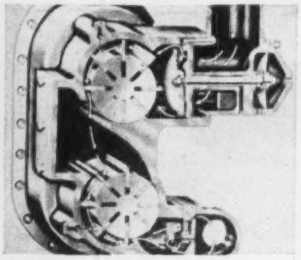
ONLY BLUE BRUTE



Accessibility—All the principal working parts of a Blue Brute rotary can be removed and replaced in just 40 minutes with standard tools! The reason is Over-Under Design which keeps the outboard end of each cylinder exposed. You can check it on the spot and make adjustments without delay.



The Clutch—Unlike most rotaries, a Blue Brute's clutch allows you to warm up the engine *without engaging the compressor*. Less strain on the engine means easier starts, less wear and tear, years of extra life. As shown above the clutch is easy for the operator to engage and disengage.



Self-Draining Cylinders permit gravity flow of oil from low pressure cylinder through the interstage chamber, through the high pressure cylinder, and out the discharge to the oil reservoir. Oil cannot be trapped in cylinder low spots during shutdown. No chance for sludge or tar clogging the compressor.

Two-Stage Oil Separation—The first stage is a Vortex separator in the compressor discharge which removes 95% of the oil. (In the 125' rotary a velocity change elbow is used.) The second stage is a vertical filter located in the air receiver. This is a long-life filter, easy and inexpensive to renew.

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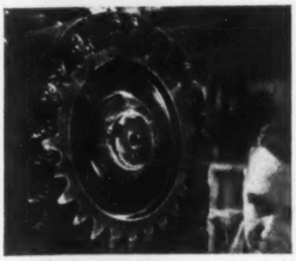
OFFERS THE BIG 5

thanks to exclusive over/under* rotary compressor design

**Over/under design is a unique method of construction that puts the second stage compressor cylinder directly under the first stage. It is an exclusive Worthington development that benefits you five ways.*



Chain Drive–Driving power, from the high pressure rotor shaft to the low pressure shaft, is a strong silent chain drive. Based on actual field experience, this drive has a predicted life in excess of 20,000 hours, or 10 hours a day, 200 days a year, for more than 10 years!

Compare the Blue Brute rotary compressors with other leading units, feature for feature. Only the Blue Brute has the big 5 benefits. Blue Brute rotary compressors are available in 125′, 210′, 315′, and 600′ sizes from your nearby Worthington Blue Brute distributor. Ask for a demonstration. Worthington Corporation, Portable Compressor & Contractors' Tool Division, Holyoke, Mass. In Canada: Worthington Ltd., Brantford, Ont.

60-7

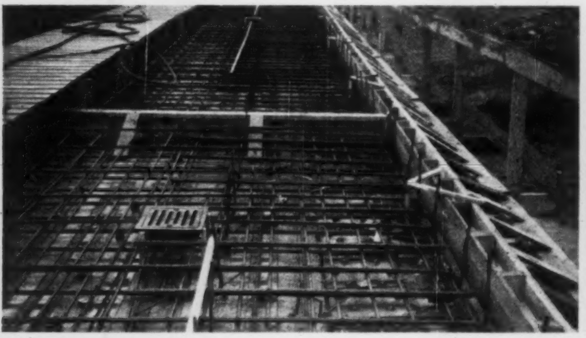
WORTHINGTON

PROGRESS REPORT FROM OHIO

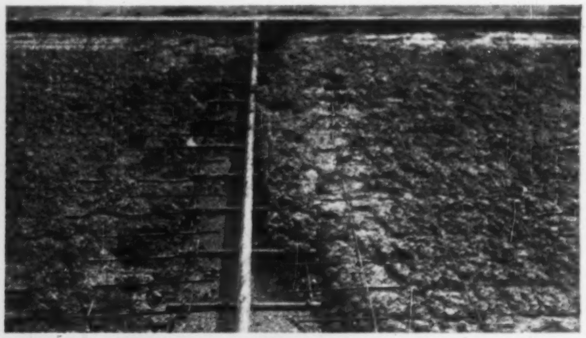
Across the Nation the road building program continues to gain impetus . . . and Ohio is a nation within a nation—a great industrial state as well as a great agricultural state—with many rivers to be bridged and expressways to be built.

Reinforced concrete is playing a major role in this vast construction undertaking. Progress reports from many important projects in Ohio show that more and more highway engineers are finding that they can count on their bridge and separation structures being "completed on time" when they design in reinforced concrete.

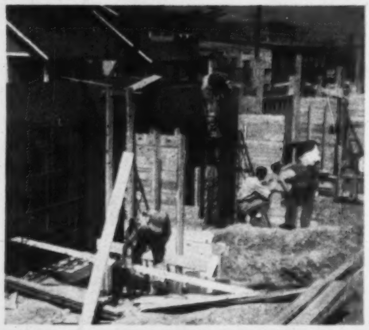
New Ohio bridges take shape on schedule with Reinforced Concrete



Upper flange of a girder about to be imbedded in a roadway slab of a new bridge over the Little Miami River. The new bridge will have two 88-ft, two 110-ft, and one 121-ft spans.



Surface course is ready for pouring over reinforcing bars in new pavement on state Route 4, Butler County, Ohio.



Workmen build wooden forms about reinforcing bars for a retaining wall on the Akron Expressway.

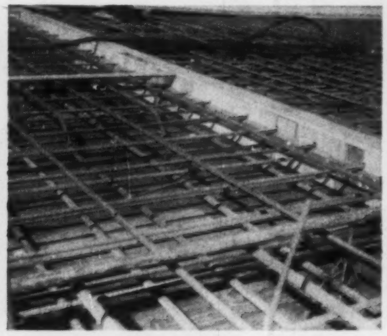
Concrete Reinforcing Steel Institute

38 South Dearborn Street
Chicago 3, Illinois

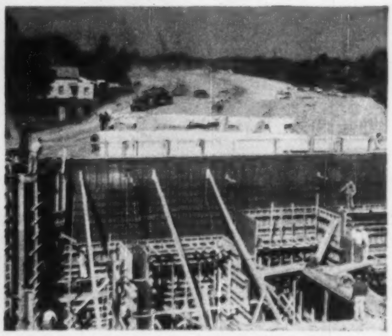
CONCRETE
REINFORCING
STEEL INSTITUTE
C.R.S.I.
FOUNDED
1924

All photographs courtesy of Ohio Department of Highways

Reinforcing bars and scuppers are placed in the forms for a new bridge over the Little Miami River on Ohio Route 74, east of Cincinnati.



Bars in place ready for pouring on a new bridge over the Little Miami River, east of Cincinnati on Ohio Route 74.



A new Akron Expressway bridge begins to take shape from reinforcing bars in the pier forms.

Newly compiled 1957 figures show cities are setting a good pace in . . .

	1940	1945	1949	1953*	1957
. . . Laying the sewers:					
Number of sewered communities	8,516	8,917	---	9,118	11,131
Census population (millions)	75.7	82.0	---	100.3	102.0
Estimated population connected (millions)	70.5	74.7	78.9	83.4	98.4
Percent of census population connected	93.1	91.1	---	83.0	96.4
. . . Reducing raw discharge:					
Number of communities	3,597	3,610	3,718	---	3,165
Estimated population served (millions)	29.9	27.9	28.1	28.2	21.9
. . . Constructing treatment plants:					
Number of communities	5,085	5,480	---	6,816	8,066
Estimated population served (millions)	40.6	46.9	50.8	55.2	76.4
Percent of total sewered population	57.6	62.7	64.4	66.2	77.7

*Data from ENR Inventory of Sewage Disposal Facilities – Oct. 15, 1953 p. 37

Where We Stand on Pollution Control

There's encouraging news in the latest and most complete inventory of municipal sewage treatment facilities in the U.S., just compiled by the U.S. Public Health Services. The published summary will soon be available from PHS.

Population served by treatment plants increased 38%, from 55.2 to 76.4 million between 1953-1957. That's a big improvement over the 8% gains between 1949-1953 and 1945-1949. The 98.4 million persons served by sewers represent 57% of the U. S. population.

The encouraging trend continues when you break down the type of treatment.

Population served by secondary, or complete, treatment increased 66%, from 26.1 to 43.3 million, between 1949 and 1957. Primary and intermediate plants increased 50% in population served during this period.

• **The best ever**–The new summary for 1957 is the third published by the Public Health Service. And it's the most complete ever. It breaks down various treatment processes by population served, as well as by number of plants using them. Population figures give a truer indication of the extent to which each type of treatment plant is used.

There are also breakdowns by population groups and major drainage basins, in addition to state by state rundowns. Use of high-speed data processing equipment made these additions possible.

Earlier PHS inventories were published in 1940 and 1945. ENGINEERING NEWS-RECORD filled in the gaps by conducting and publishing similar surveys in 1946 (ENR Nov. 14, p. 112) and 1953 (ENR Oct 15, p. 37).

• **Urban progress**–In terms of sewer systems, the 1957 data show that new urban population is being connected to sewers as it develops and that some headway has been made in reducing previously unconnected population in urban areas. In 1945 only 91% of the census population of sewered communities was connected, while today over 96% is connected. This trend also is borne out by comparing the sewered population increase since 1945 (32%) with the increase in census population of sewered communities (25%).

Another significant trend is the increase in population served by treatment facilities of centralized sanitary districts or other communities. Now 20 million persons are served, an increase of 65% since 1945. It can be argued that this is a gratifying development, since the larger plants associated with central sanitary districts are normally better operated and better designed.

The trend toward separate sewer systems continues. Now 82% of the 10,500 communities reporting is served by separate sanitary sewers. There was a decrease in the number of communities reporting combined sewers between 1945 and 1957.

In primary treatment plants, the increase in mechanically cleaned settling tanks was substantial. This type tank now serves 73% of the population served by primary plants, compared to 56% in 1945. In actual population served, the mechanical tank has jumped 95% since 1945.

• **Disturbing note**–The one disquieting point–and a consequential one–in the new inventory is this: Even with the tremendous volume of treatment plant construction these days, there probably has been a slight increase of pollution loading from community systems discharging into the nation's streams. True, there has been gratifying decrease in population discharging raw sewage; but the reduction of pollutant materials achieved by treatment plants has not been enough to offset the tremendous increase in population served.

This point, and all the other conclusions above, are amplified in tables and analyses on the following pages.

The complete summary of the 1957 inventory (PHS Publication 609) is to be published this summer and can be obtained by writing: Water Supply and Water Pollution Program, Department of Health, Education & Welfare, Washington 25, D. C.

This publication includes large summary tables in which each of the headings shown on the following pages, plus many others, is broken by state, population group and drainage basin. It has been authorized by John R. Thoman, senior sanitary engineer, and Kenneth H. Jenkins, analytical statistician, of USPHS.

(*Story continued on page 42*)

. . . Population served by treatment plants increased 38% in four years

The summary includes no industrial or institutional data. The term "municipal" includes not only incorporated and unincorporated communities, but sanitary districts in their many forms.

All data in the inventory are for 1957 except for Alabama, Michigan and Louisiana communities where 1953 figures had to be used.

While Publication 609 will be a complete summary, the basic data that is received for each community from state pollution control administrations is scheduled to be published later on during the summer.

How Municipal Inventory Was Prepared So Quickly

The 1957 inventory of municipal sewage treatment was processed in a fraction of the time required for the previous PHS inventories. Information was gathered and forwarded by state regulatory officials on a single PHS form for each community. Clerical personnel coded the data and prepared addressograph plates from which each community's story was printed as a one line item in tabular form.

Meanwhile, punched cards containing the same coded information were prepared and verified in standard IBM equipment. The IBM sorter then was used as a second-verifier. The sorter could check out coding of the PHS personnel, accuracy of transcription of data on addressograph and even the original supplying of data by the states (i.e., if a community showed a primary plant, there should not be a notation in the trickling filter column on the punched card).

Of about 12,000 punched cards, the sorter kicked out 250. About half had incorrect original information, one-quarter contained coding errors. Surprisingly, the last quarter of the cards contained punching errors that had gotten through the regular punched card verifiers (a second operator repunches the data in the original punched card, on the theory that two operators won't make the same mistake).

The sorter then was used to arrange the punched cards by the desired grouping (state, basin, population group).

The cards were then run through an IBM 407 printer, which served as a tabulator on this job.

It was found that an electronic computer is really necessary to do the arithmetic and percentage work. A digital computer will be used on future work of this type.

Data preparation was supervised by Arthur D. Smart, under the direction of John B. Thoman.

Here's the changing picture from 1940 to 1957:

Treatment	Assigned Percent Reduction	Estimated Population Discharged (Millions)		
		1940	1945	1957
None	0.0	29.9	27.9	21.9
Minor	0.0	3.3	4.3	1.9
Primary	31.3	10.4	11.8	17.6
Intermediate	45.5	2.2	2.1	3.0
Secondary	82.5	3.2	3.8	7.6
Total		49.0	49.9	52.0

1 The only discouraging note

An increase of 4.5% in total population discharged to streams between 1945-1957, and an increase of 6.3% in the 1940-1957 period is indicated in Table I. Note that Table I is based on "population" only; comparable population equivalent data are not available for years earlier than 1957. However, preliminary study indicates 75 million population equivalents (PE) are being discharged to streams, and 65 million PE are being removed in treatment plants in cities around the country.

The percent reductions assigned to the different treatment processes are based on data reported in 1957 for about 55% of the sewered population. Note that they are 5 to 10% lower than conventional design removal rates. That may indicate overloaded plants, poor design or poor plant operation—or all three.

Since Table I causes reflection as to the accomplishment of current pollu-

1957 nationwide breakdown of primary,

Process	Number of Plants	Estimated Pop. Served (Millions)	Percent of Estimated Population Served
Septic tanks	780	1.0	3.8
Imhoff tanks	1,084	3.3	13.0
Mechanically cleaned tanks	656	18.6	72.7
Plain, hopper bottom tanks	80	1.3	5.2
Settling tanks- No detail in Inventory	53	1.0	4.0
Others and Unknown	77	0.3	1.3
Total	2,730	25.5	100.0

4 Mechanically cleaned primary tanks lead

Imhoff and septic tank primary plants show up as most numerous in Table 4. But they serve only 16.8% of the primary population. In 1945 these two processes served 36.0% of the primary population and accounted for 83.5% of all primary plants. On the other hand, mechanically cleaned settling tanks increased 84% in number and 95.1% in population served between 1945 and 1957.

In general, septic tank and Imhoff plants predominate in smaller communities, while the mechanically cleaned tank is the major type in cities of over 5,000 population.

Considerable variation exists among the various basins. Comparison of Tables 4 and 6 indicates that many of the Imhoff and spectic tanks may be converted into exclusive sludge handling facilities.

In pollution discharged, degree of treatment and type of secondary process

Degree of Treatment	1940	1945	1949	1957	% Change '45-'57	% Change '49-'57
			Number of Plants			
Minor	49	60	54	41	−31.7	−24.1
Primary	2,889	2,829	3,019	2,730	−3.5	−9.6
Intermediate	2,630	98	107	100	2.0	−6.5
Secondary		2,799	3,050	4,647	66.0	52.4
Total	5,580	5,786	6,230	7,518	29.9	20.7
		Estimated Population Served (Millions)				
Minor	3.3	4.3	3.9	1.8	−56.4	−51.7
Primary	15.1	17.2	17.2	25.7	49.5	49.1
Intermediate	22.2	3.8	3.6	5.6	48.6	54.2
Secondary		21.7	26.1	43.3	100.0	72.3
Total	40.6	47.0	50.8	76.4	63.1	50.5

2 Secondary treatment is on sharp rise

Type of Treatment	Estimated Population Served (Millions) 1940	1945	1957
Chemical Treatment	4.0	5.3	7.3
Activated Sludge	10.5	11.6	25.0
Trickling Filter Standard Rate	8.4	8.8	11.3
Trickling Filter High Rate		0.7	6.5
Intermittent Sand Filter	0.9	1.0	0.9
Application to Land	0.9	1.3	2.0
Lagoons	——	0.2	2.4

3 Activated sludge is drawing away

tion abatement programs, all of the data are the subject of a special PHS study to be reported at a later date.

Table 2 points up the sharp rise in secondary treatment construction since 1945. Some 43.3 million persons served by complete treatment represent 57% of the treated population and 44% of the sewered population (98.4 million). Significantly, there have been decreases since 1949 in the number of plants in all categories other than secondary.

Table 3 gives striking evidence of the increasing popularity of the activated sludge process. But transcendent as its position has become, the greatest percentage increase during 1945-1957 was for lagoons, or stabilization ponds. The number of ponds increased from 45 to 631; they are concentrated in the smaller communities and the West.

Note that the data in Table 3 are not additive. In all the other summaries shown, where a plant incorporates two or more processes, it has been arbitrarily assigned to the predominant type. In Table 3, the full population of dual process plants has been assigned in both places. Thus, total of the 1957 columns less chemical treatment is 48.1 million, compared to 43.4 million for secondary treatment in Table 5. The exact population served by each type of secondary plant lies somewhere between the two, though much closer to the smaller figure.

secondary and sludge handling processes

Process	Number of Plants	Estimated Pop. Served (Millions)	Percent of Estimated Population Served
Activated sludge			
Mechanical aeration	259	0.9	2.1
Diffused air	284	20.2	46.5
Others	46	3.7	8.5
Trickling filters			
Standard rate	1,870	9.3	21.6
High rate	812	6.0	13.8
Sand filters	394	0.8	1.9
Land application	340	1.0	2.3
Oxidation ponds	430	0.8	1.8
Others & Unknown	212	0.7	1.5
Total	4,647	43.4	100.0

5 Activated sludge predominates in big cities

Process	Number of Plants Using	Est. Pop. Served (Millions)
Chlorination	2,216	37.8
Grit removal	1,581	51.7
Sludge processsing		
Septic tank	1,120	---
Imhoff tanks	2,759	---
Stage digestion	272	---
Separate digestion	2,790	---
Drying beds	5,342	---
Lagoons	167	---
Mech. dewatering	197	---
No organized method	1,781	---
Miscellaneous	226	---

6 Chlorination, grit removal, sludge

Table 5 shows the activated sludge process is used in 589 plants serving 24.8 million persons. This type predominates in cities over 25,000 population. There are considerable differences in process use among the various basins. For example, in the Lake Erie basin almost 55% of the plants (by number) are activated sludge, while in the Colorado River basin the corresponding figure is only 5.2%.

The diffused air method of actuated sludge is quite universal.

The figures shown in Table 6 for chlorination comprise 29.5% of all treatment plants and 49.5% of the population served. In 1945, comparable quantities were 21.8% and 34.2%, respectively. The latest figures represent increases of 75.6% in plants using and 136% in population served.

For grit removal, the figures shown represent increases from 1945 to 1957 of 107% in number of plants so equipped and 86% in population served.

While 1,781 plants do not report any organized method of sludge dewatering, it is probable that some have drying units that have not been reported to state officials. The majority of the 1,781 plants are small Imhoff or septic tank plants.

(*Story continued page 44*)

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Regional look and the perspective of history

Geographical Area	1950 Census Pop. of Sewered Communities	Est. Pop. Connected to Sewers	% of Connected Pop. Sewage Discharged, Treated	Est. Pop. Served by Primary, Intermediate Plants	Est. Pop. Served by Secondary Plants
1. New England	7.5	6.4	69.3	2.4	1.1
2. Middle Atlantic	24.9	23.9	71.4	7.8	8.6
3. South Atlantic	10.1	9.5	72.4	3.5	3.3
4. East North Central	22.6	22.3	88.7	5.8	13.9
5. East South Central	4.5	4.1	55.7	1.4	0.9
6. West North Central	8.5	7.5	63.1	1.7	3.1
7. West South Central	8.7	8.1	83.5	0.5	6.3
8. Mountain	3.1	3.5	77.8	1.1	1.7
9. Pacific	12.1	12.9	90.7	7.2	4.4
Total	102.0	98.3	77.7(Avg)	31.4	43.3

1-Maine, N.H., Vt., Mass., R.I., Conn.
2-N.Y., N.J., Pa.
3-Del., Md., District of Columbia, Va., W.Va., N.C., S.C.
4-Ohio, Ind., Ill., Mich., Wis.
5-Ky., Tenn., Ala., Miss.
6-Minn., Iowa, Mo., N.D., S.D., Neb., Kan.
7-Ark., La., Okla., Tex.
8-Mont., Idaho, Wyo., Colo., N.M., Ariz., Utah, Nev.
9-Wash., Ore., Calif.

7 Where the twain meet—sometimes

Year	Total U.S. Pop.—Millions	Number of Sewered Communities	Pop. Served By Sewers—(Millions)
1860	31.4	10	1.0
1870	38.6	100	4.5
1880	50.2	400	9.5
1890	62.9	450	16.1
1900	76.0	950	24.5
1910	92.0	1,600	34.5
1920	105.7	3,000	47.5
1930	122.8	5,100	61.5
1935	132.0	6,800	69.5
1940	132.7	8,516	70.5
1945	139.6	8,917	74.7
1948	144.6	—	76.7
1949	149.2	—	78.9
1957	171.2	11,131	98.4

8 Sewers are catching up

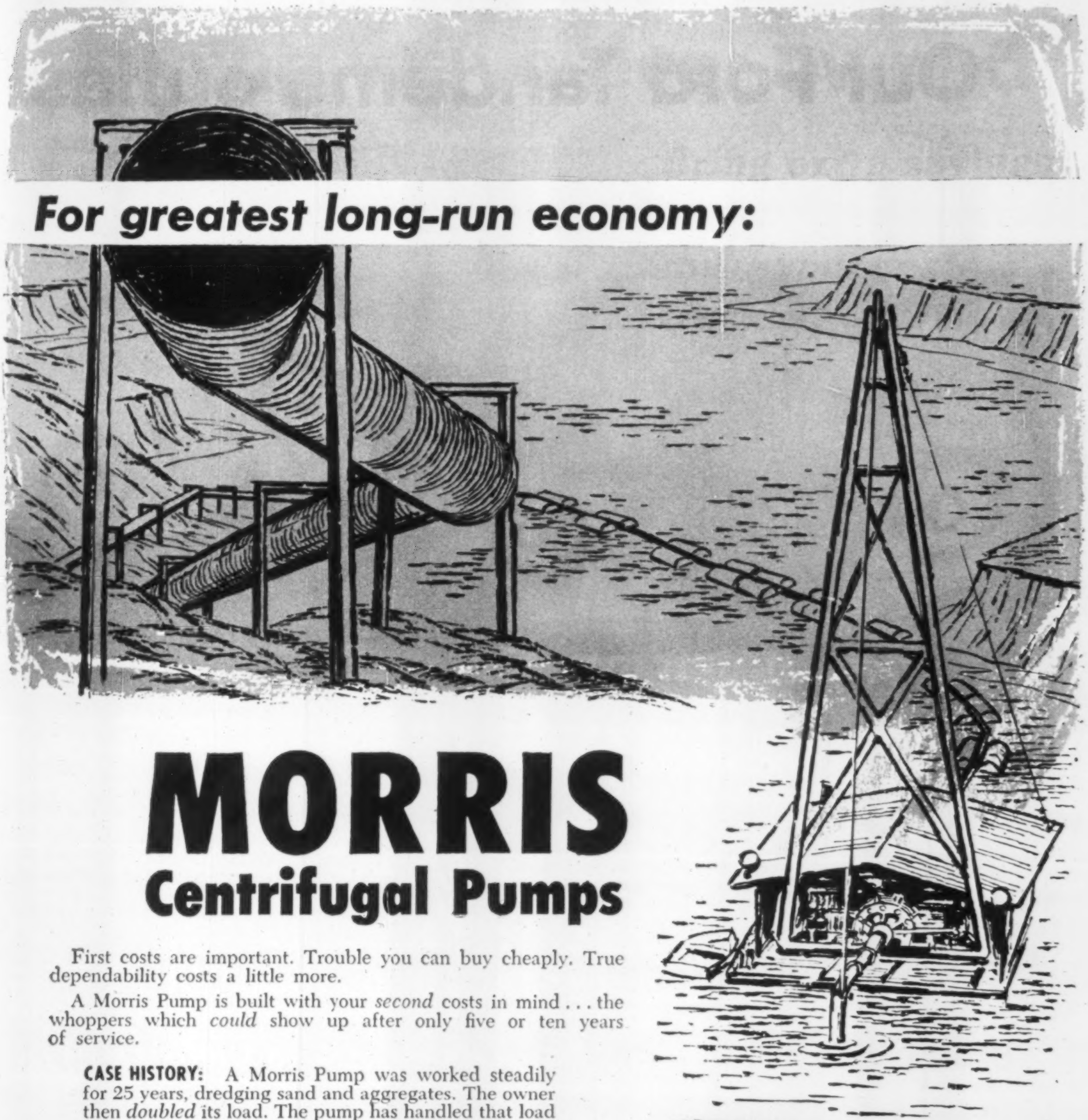
The connected population can exceed the census population in Table 7, since the latter is based on the 1950 census in most instances. Only along the Pacific Coast do the connected figures exceed 100% of census population.

Although the East-South-Central area has only 55.7% sewered population served by treatment of any type, the comparable figure in 1945 was only 31.3%, indicating substantial progress. In the Ohio River basin (not shown) 58% of the sewered population is served by treatment. This, too, represents substantial progress in view of what existed in this basin 10 years ago.

Study of the regional differences indicates there may be some correlation between degree of treatment and intensity of industrialization. There also is possible correlation between degree of treatment and population density. However, a detailed analysis of these factors has not yet been made.

Table 8 bears out the conclusion that new urban population is being connected to sewers as it develops and that inroads are being made in cutting down the existing unconnected population. In 1945, about 53.5% of the total U. S. population was connected to sewers, while in 1957, the figure was 57.5%.

Over 2,200 communities have installed sewers since 1945, an increase of 25%. Corresponding increase in population is 32%. Since the census population during these years rose only 25%, further credence is given the conclusion that the unconnected urban population is being reduced.



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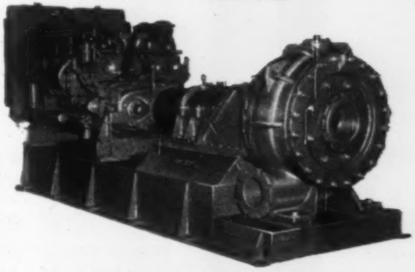

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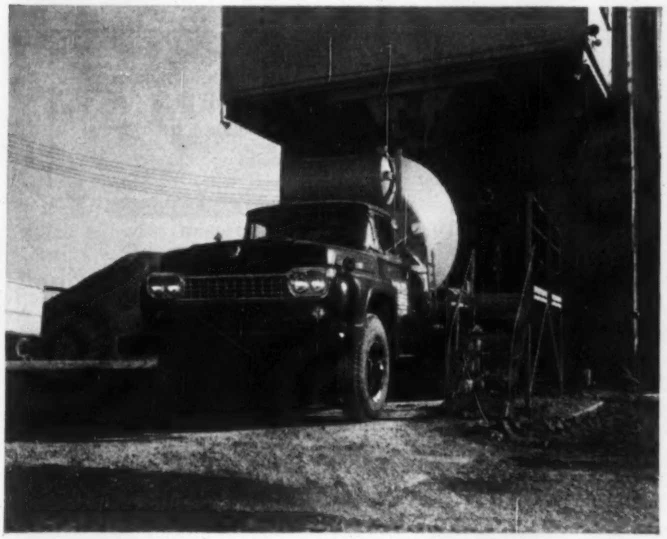

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5 cities report on . . .

The long service life of tar-enameled steel pipe

ST. LOUIS—60-in. ID tar-enameled pipe, some 30, some 20 years old, still on the job and reported to have given "uniformly satisfactory service."

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MINNEAPOLIS—Portion of 19.5 mi. 48-in. ID tar-enameled steel main crosses Mississippi River, cradled under bridge, completely exposed to the rigorous climate. Through nine years with a temperature range of 132 degrees, the pipe has functioned "perfectly."

SYRACUSE—54-in. ID steel pipe installed underwater in 1893 (asphalt lined) and 1938 (tar-enameled). "Inspections indicate that both are in excellent condition today."

TAMAQUA, PA.—30-in. ID tar-enameled steel pipe used continuously since 1932. Despite highly corrosive coal-bearing soils, undermining, and soil subsidence, there has been no damage to the pipe, and flow capacity is "as good as ever."

No other large-diameter water pipe can approach tar-enameled steel pipe in its strength to withstand high pressure from within and destructive forces from without; its leakproof joints; its ability to span washouts; its resistance to corrosion; and its maintenance of high flow capacity. And, remember, every length of steel pipe is hydrostatically tested after fabrication as required by AWWA specifications, usually to twice the required working pressure!

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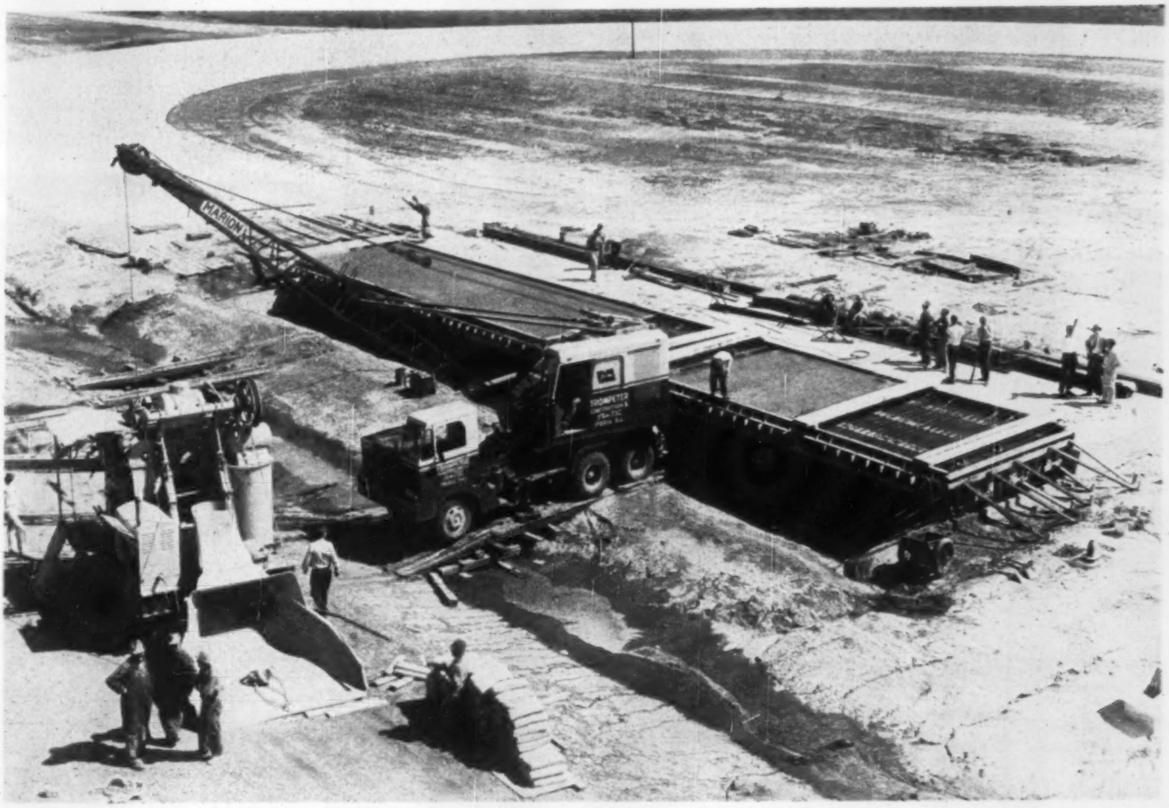


Pouring of bridge decks at test road in Ottawa, Ill., shows . . .

ASSHO Bridge Studies Will Start Soon

What happens to a highway bridge under a half-million repetitions of axle loadings? How do reinforced concrete girders or structural steel beams perform under repeated overstressing? What are the effects of impact from moving loads?

Research engineers soon will start collecting data that will supply the answers to these and many other questions of import to bridge designers. Their work is part of the $22 million AASHO Road Test near Ottawa, Ill. (ENR June 19, p. 52).

The bridge research program will cost about $470,000. It includes sixteen 50 ft simple-span test bridges, located in groups of four in two of the five test loops. Test traffic will be started early this fall.

Test vehicles will be standard makes of trucks and tractor-semi-trailer combinations. During normal testing procedure, there will be six identical trucks operating in each traffic lane of each loop.

Four test spans will be subjected to 22,400 lb single-axle loads, and four to 30,000 lb single-axle loads. Four other spans will carry 40,000 lb tandem-axle loads. The last four will be subjected to 48,000 lb tandems—the heaviest loading to be studied during the entire program.

Trucks will operate about 18 hours per day, 6 days per week for two years, at a constant speed of 30 mph. They will be driven by Army Transportation Corps troops assigned to the project by the Department of Defense. Theoretically, each test bridge that survives the two-year test period will be subjected to about 600,000 applications of its particular axle load.

• **AASHO, the sponsor**—Both the bridge-testing and over-all rigid and flexible pavement-testing projects are sponsored by the American Association of State Highway Officials. The projects are administered and directed by the Highway Research Board of the National Academy of Sciences—National Research Council. The entire program is financed by the 48 states, District of Columbia, Hawaii and Puerto Rico; the Bureau of Public Roads; American Petroleum Institute; and Automobile Manufacturers Association—with the cooperation of the Department of Defense.

There are eight structural steel rolled-beam bridges; two have shear connectors welded to the top flanges, and five have partial length cover plates welded to the bottom flanges. The other eight bridges are reinforced concrete girders; four are prestressed and four are of conventional design construction.

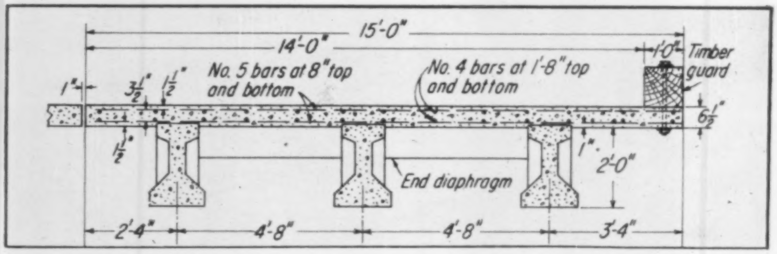
All 16 bridges have cast-in-place reinforced concrete roadway slabs, 6½ in. thick, 15 ft wide and supported on three lines of girders or beams. The concrete girders are spaced 4 ft 8 in. c-c, and the steel beams are 5 ft 0 in. c-c.

• **Prestressed concrete**—The concrete bridges were designed for complete interaction between the slab and the beams. Designs of the prestressed concrete beams were based on the moment of inertia of uncracked sections, with a tensile stress of 300 psi or 800 psi being the governing factor.

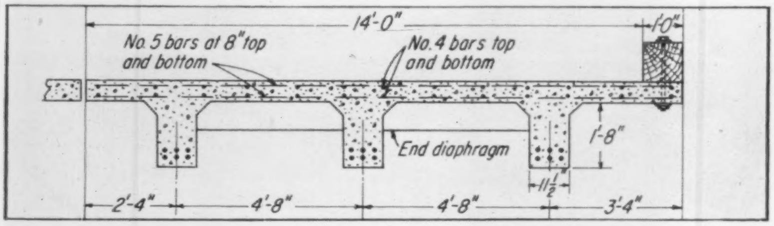
The higher tensile stress (800 psi) is expected to cause cracking of the concrete on the first application of load. This will provide information on the fatigue behavior of cracked prestressed concrete beams.

Two of the prestressed concrete

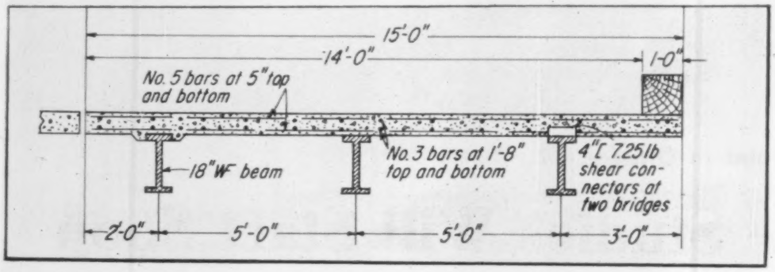
. . . Steel and Concrete will be tested many ways



Prestressed concrete beams are used on four test bridges while . . .



Reinforced deck girder construction is used on four others . . .


15'-0"
14'-0"
1'-0"
No. 5 bars at 5" top and bottom
18" WF beam
No. 3 bars at 1'-8" top and bottom
4" [7.25 lb shear connectors at two bridges
2'-0"
5'-0"
5'-0"
3'-0"

Structural steel beams are featured on eight of the bridges. Two of them have shear connectors for composite action.

bridges have post-tensioned beams and two have pretensioned beams.

The post-tensioned beams are reinforced with parallel wire cables. Each cable is made of ten 0.192 in. dia wires in a flexible metal sheathing. They are anchored with Freyssinet cone anchorages. The pretensioned beams are reinforced with ⅜ in. 7-wire strands anchored by bond.

Concrete in the prestressed beams was designed for a nominal strength of 5,000 psi at 28 days, with an entrained air content of 3% to 5% and an average slump of 1½ in. Wire for prestressing had a minimum ultimate tensile strength of 250,000 psi.

• Reinforced concrete—The non-prestressed beams in the other four concrete bridges were designed by the straight line, cracked section theory for tension stresses of 30,000 psi and 40,000 psi in the steel. Concrete had a nominal 28 day strength of 3,000 psi.

Primary points of interest in testing these structures will be the effect of repeated loading on both the crack width and spacing and the fatigue behavior of the reinforcing steel in the bridges.

• Steel beams—Design of the wide-flange steel beams, which range from 18 in. at 50 lb to 21 in. at 62 lb per lin ft, was based on the moment of inertia method. Two tension stress levels were chosen: 27,000 psi and 35,000 psi.

The 27,00 psi was selected as a high stress level that is not likely to result in fatigue failures. The stress level of 35,000 psi, however, may lead to fatigue failures, especially in beams with tension cover plates.

• Concrete tests—The program includes a wide variety of tests on concrete. Compression tests and modulus of rupture tests will be made on cylinders at three ages: 28 days, the beginning of the test traffic, and at the conclusion of the bridge test.

Creep and shrinkage tests are being made on several concrete cylinders as an aid in studying the time-losses of stress in prestressed concrete members. Three stress levels are involved: zero psi, 1,000 psi and 2,000 psi.

Flexural fatigue tests will be made on plain concrete beams for evaluation of the fatigue characteristics of concrete in the prestressed beams. Another study calls for evaluation of the thermal coefficient of expansion of the three types of concrete used in the test bridge.

• Steel tests—Since the time losses of stress in prestressed concrete beams are a function of the relaxation properties of the prestressing steel, a series of eight relaxation tests of prestressing wire and strand will be performed. The tests will be carried out at two stress levels: 140,000 psi and 175,000 psi. Each specimen will be tested for at least 1,000 hours.

The characteristics of the prestressing wire and strand, reinforcing bars, and structural steel will be evaluated by direct tension tests and fatigue tests. Residual stress measurements also will be made on 2 ft samples from the rolled steel beams as part of the research being made on fatigue behavior of the steel bridges.

• Pre-traffic tests—Before the test traffic starts, measurements are being made of the permanent stresses in the bridges. They'll be used later in determining the actual stress levels in the structures. Preliminary analysis of the dynamic response of the bridges also will be conducted for selection of the most suitable structures, vehicle characteristics, speeds and locations.

During the two years of use by test traffic, data will be collected to get answers to the two principal objectives of the program: Determination of both the bridge behavior under repeated application of overstress and the dynamic effects of moving vehicles.

To determine the dynamic effects, special runs of vehicles of various weights and at various speeds will be made on some of the test bridges at irregular intervals.

• Instrumentation—Research engineers in charge of the bridge tests consider strains and deflections to be most significant, since the response of a bridge to a loading can be measured in terms of deformations.

Two types of strains will be measured: Transient strains, caused by moving loads, and permanent strains caused by dead loads and time effects.

Transient strains will be measured by electric resistance strain gages as transducers, located primarily on the bottom surfaces of the beams at points of maximum stress. The strains will be recorded with oscillographs capable of instantaneous recording of the transducer responses. Equipment will be available for the simultaneous recording of the responses of 48 transducers.

(Story continued on page 51)

. . . Profiles will be run

Permanent, or cumulative strains, are measured with mechanical strain gages at midspan of each bridge beam and recorded manually.

• Deflections—The transducers for observation of transient deflections are cantilever beams equipped with electric resistance strain gages. Deflection beams will be fastened to the bridge beams near midspan and at several other locations.

Permanent deflections are observed at midspan and the quarter-points of the bridge beams. Special target scales in conjunction with a precise level are used for observing these deflections.

Additional measurements to be made include crack patterns and crack widths in the concrete beams, plus slip lines on the steel beams. Transverse and longitudinal profiles also will be run on the bridge slabs, and substructure elevations will be recorded.

• Test traffic—An electronic scale and several tire pressure transducers will be used to evaluate static and dynamic properties of the test vehicles. Tire-pressure transducers can be transferred from truck to truck, permitting recording of the actual wheel loads.

Velocity of the vehicles will be checked occasionally by a fifth wheel on each, specifically for speed recording. Mechanical traffic counters on each test loop continuously will record the number of load repetitions. Distribution of temperature in the structures will be measured by 40 thermocouples at various points on the beams and in the slabs of 8 of the 16 bridges.

• Engineers and contractors—Research at the AASHO Test Road is under direction of W. B. McKendrick, Jr., project director, and W. N. Carey, Jr., chief engineer for research. Ivan M. Viest is in charge of the bridge branch of the project.

The design criteria were formulated and the designs checked by a sub-committee of the Highway Research Board under direction of G. M. Foster, then with the Michigan State Highway Department.

Steel bridges were designed by N. Van Eenam of the Bureau of Public Roads. Concrete bridges were designed by H. N. Wilcox of the BPR and A. L. Farme of the Portland Cement Association.

Construction of the bridges is under the direction of W. E. Chastain, Sr., of the Illinois Division of Highways. T. E. Hagerman is resident engineer. The substructures were built by the Arcole-Midwest Co. and S. J. Groves & Sons. The superstructurers were built by Valley Builders, Inc.

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Photo to the right illustrates the drill barge HORNET IV used in the Amherstburg Channel deepening project by contractors Marine Operators of Windsor. This 20 drill rig including compressors and diesels is mounted on a 160' x 30' sectional barge made up of 11 sections. 40 foot spuds are used to position the barge.

DRILL BARGE
HORNET IV

A clam operation off the rock bound shore of Lake Superior. The crane is mounted on a 4 section barge which was transported by highway to the site.

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TEXACO LUBRICATION ENGINEER R. H. Trimmer reviews lube problems with Supt. G. L. Laughton who credits Texaco Simplified Lubrication Plan with cutting maintenance costs and keeping big mining job on schedule. ▶

never removed the pan"

"The Texaco Simplified Lubrication Plan keeps maintenance costs down, keeps the job on schedule," reports George L. Laughton, Supt. of Isbell Construction Company's Three Kids Mine project.

Isbell Construction Company is doing strip mining on contract with Manganese, Inc., Henderson, Nevada. They are using a Texaco Simplified Lubrication Plan for this project, and it is piling up some outstanding records.

"As of January 17, the truck shown in the picture had operated 7,714 hours using *Texaco Ursa Heavy Duty SAE 40* exclusively, and it's never had the pan removed," reports Superintendent George L. Laughton. "We also use *Texaco Crater 2X Fluid* for wire rope, *Texaco Gear Lube HD* for transmissions, *Texaco Marfak* and *Texaco Marfak Heavy Duty*, for chassis and wheel bearings. We are entirely satisfied with Texaco lubricants," says Mr. Laughton, "and we have never had a failure due to lubrication."

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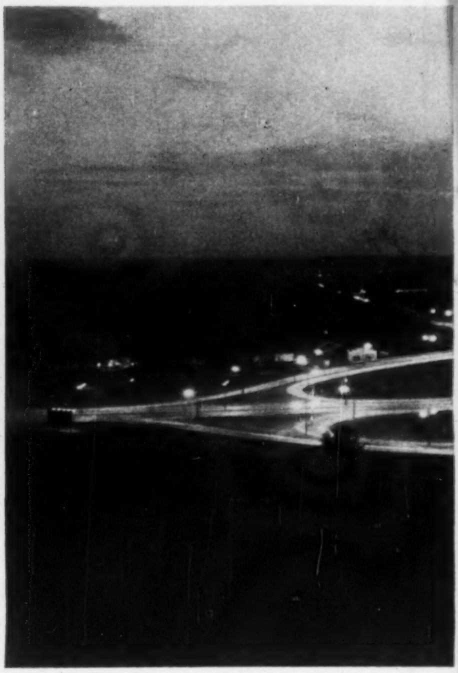
MERGING TRAFFIC

Super highways mean super speeds with less time for the driver to react to dangers ahead. Highways lighted at danger spots will give the driver added visibility, with safer nighttime driving the result.



FULL CLOVERLEAF interchange needs good

Where Lights Are Needed to Get

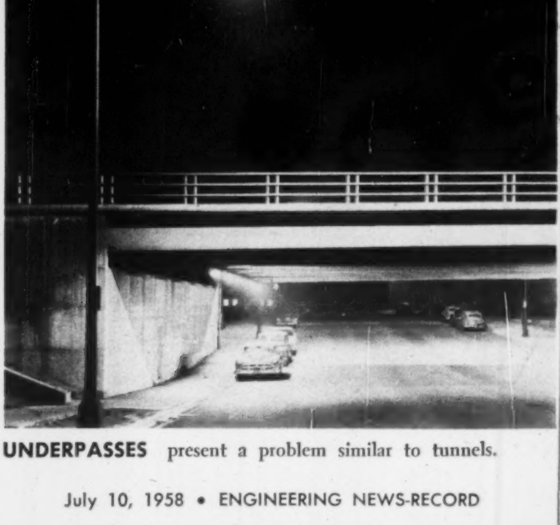
W. E. Schwanhausser, Jr.
Application Engineering Manager
Outdoor Lighting Department
General Electric Co.
Hendersonville, N. C.

Twice as many traffic fatalities happen by night as by day—even though night traffic is only one-third as heavy as daytime. That was the result of a recent study made by Detroit traffic engineers. Year after year, statistics show that 55% to 60% of our highway accidents occur at night, despite the fact that travel is reduced during these hours.

Why this high nighttime accident rate? Surely, one reason is that the driver simply cannot see ahead. Headlights at their best fail to provide visibility of over 300 ft, and frequently less than 200 ft.

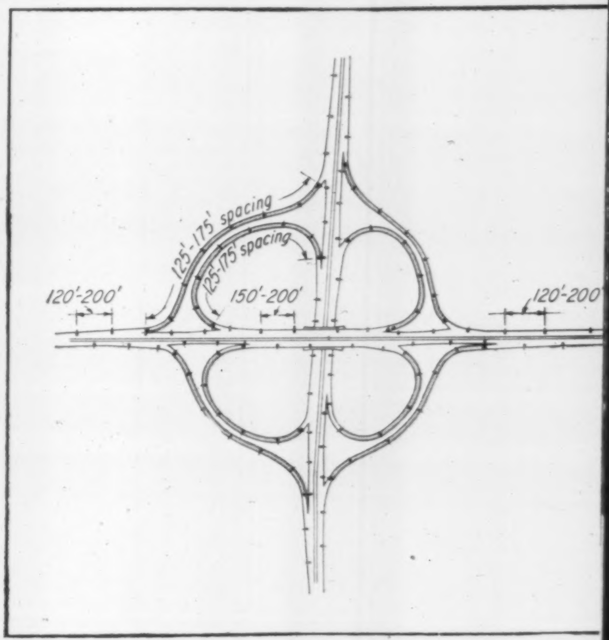
In addition to the safety factor, data is available to indicate that highway lighting helps preserve a road's capacity. Also, by giving improved visibility, traffic engineers believe fixed lighting re-

TUNNEL can take fluorescent luminaires for good level of illumination.



UNDERPASSES present a problem similar to tunnels.

lighting. General practice calls for locating standards at outer curve.



UNIFORM LIGHTING is assured by 125 to 175 ft spacing of luminaires, depending on the degree of the curve.

Drivers Out of Dark

duces driver strain, making him more comfortable and alert. Most often, oncoming headlights tend to reduce a driver's efficiency and to make him prone to accidents.

If highway lighting can reduce accidents, improve a road's capacity, and add to a driver's efficiency and comfort, where are lights needed?

• **On open road**—In the main flow of traffic, the lighting level may be decreased to a minimum in lightly traveled and rural areas. But even the experts disagree on where continuous lighting is justified. The general feeling is that it should be considered when traffic density exceeds the IES-ASA classification of "heaviest" (1,200 to 2,400 vehicles per hour).

A popular roadway design of the interstate system will be four lanes divided by a 36 ft median flanked by two 10 ft shoulders. To light such a section for suburban or urban areas a minimum of 0.8 foot-candle should be provided. With high density traffic, levels of up to 1 or 2 foot-candles should be provided. The luminaire should be located over the pavement, on an arm extending from the pole.

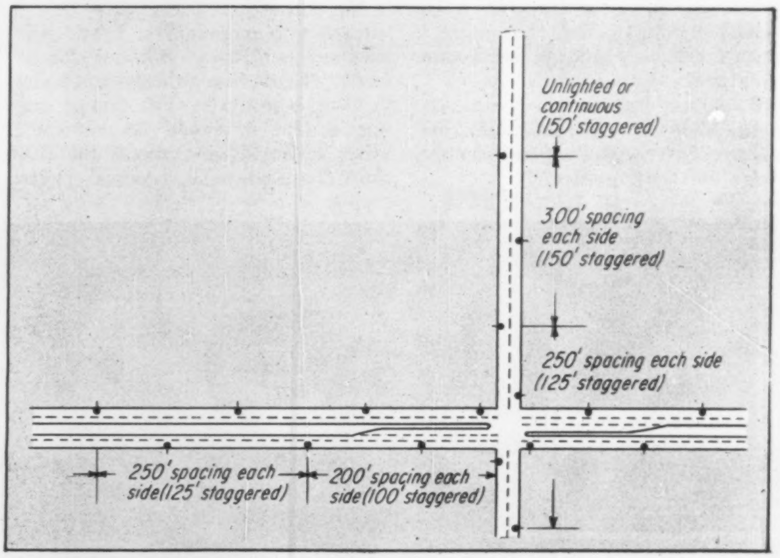
(*Story continued on page 56*)

Fluorescent lamps are most useful here.

BRIDGES can be effectively lighted with mercury vapor lamps about 125 ft apart.

. . . The most important highway interchanges should be lighted

GRADE INTERSECTIONS are trouble spots for the nighttime motorists. Though rare in modern highway practice, they are used on older highways and on slightly traveled roads. Lighting can prove an accident stopper.


Unlighted or continuous (150' staggered)
300' spacing each side (150' staggered)
250' spacing each side (125' staggered)
250' spacing each side(125' staggered)
200' spacing each side(100' staggered)

MAJOR-MINOR intersection is a typical application for staggered lighting, spaced at 200 to 250 ft to give uniform illumination.

• **Urban multi-lane design** – In urban areas where right-of-way becomes expensive, the median strip likely will shrink as low as the 4 ft minimums specified by the Bureau of Public Roads. In this case the engineer might think of placing twin light standards down the median strip to get the most economical installation.

Unfortunately, the accident hazard increases with narrow medians. For safety at least 4½ ft clearance between the roadway edge and obstructions, such as light standards, should be allowed.

Consequently, when narrow medians exist, the recommended practice is to place the standards along the outside curb lanes or just outside the shoulder. If a barrier curb exists, the light pole should be placed about 5 ft back from the edge.

Even though mounting luminaires in the median strip is discouraged, there are exceptions worth considering. For example, installation of twin light standards with long mast arms is acceptable when the median strip is large enough.

• **Intersections and interchanges** – While grade crossings are discouraged for modern highways, they may be permitted in some remote locations. Here they are hazards that need light.

Primary characteristic of newer highways are interchanges, which can take many forms. The most important interchanges with the highest traffic densities should be lighted.

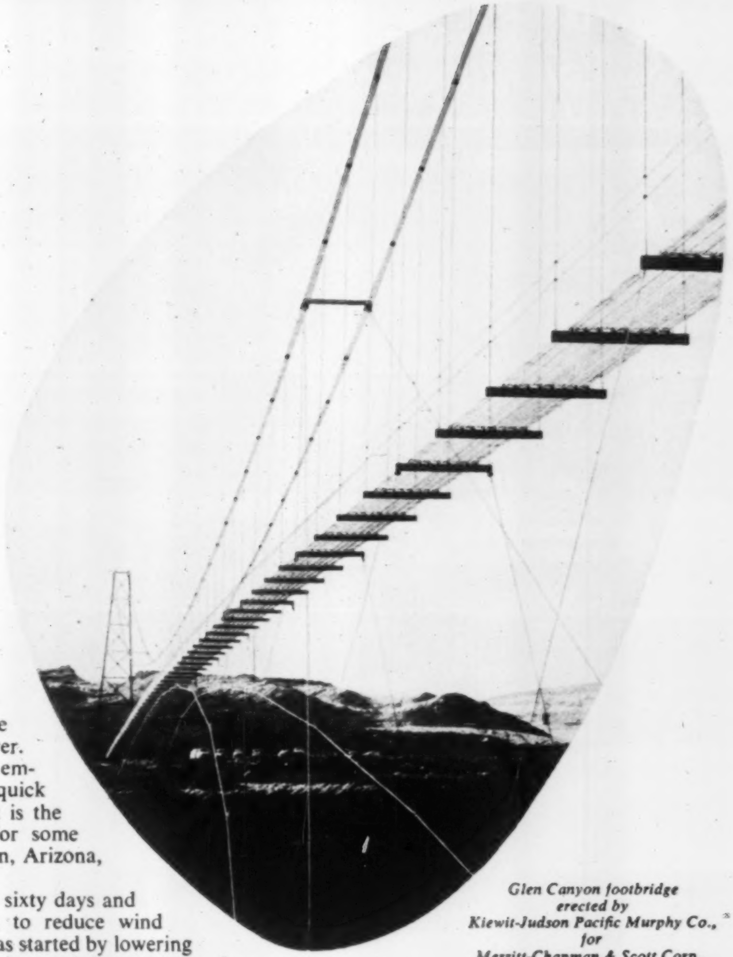
The simplest interchange is the jug handle, generally found at points of access or exit. Here luminaires mounted on the outside curves will give the best uniform pavement brightness.

In the full clover-leaf, mounting poles should be located well outside the pavement with long masts extending the lights over the pavement.

Try to keep the poles away from

ROEBLING BRIDGE STRAND SPANS A CANYON TO MAKE

The Longest Footbridge in the U.S.

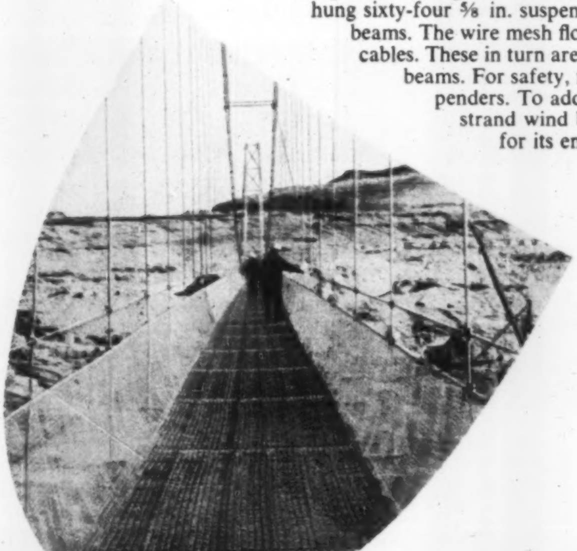


Glen Canyon footbridge erected by Kiewit-Judson Pacific Murphy Co., for Merritt-Chapman & Scott Corp., prime contractor for the Glen Canyon Dam.

Seven hundred feet above the Colorado River at the Glen Canyon Dam site in northern Arizona, this suspension bridge extends 1280 feet from tower to tower.

Designed as a walkway for project employees only, it provides ready and quick access to both sides of the river. It is the only span across the Colorado for some 200 miles between Marble Canyon, Arizona, and Moab, Utah.

The bridge was completed in sixty days and features a steel mesh deck, to reduce wind resistance. Construction was started by lowering two ⅝ in. cables to the bottom of the west side of the gorge, transporting them across the river by boat and raising them on the east side by block and tackle. The six main suspension cables are 1¾ in. diameter prestretched galvanized bridge strands. From them are hung sixty-four ⅝ in. suspenders, attached to 7 ft-wide floor beams. The wire mesh floor is laid on eight 1 in. diameter deck cables. These in turn are supported every twenty feet by the floor beams. For safety, four handrail cables are attached to the suspenders. To add stability in strong winds, two 1¾ in. bridge strand wind brace cables run below the deck on either side for its entire length.



This is an extremely long example of Roebling's readiness to supply bridge strand for any kind of bridge or suspension structure. Add engineering facilities and experience that are immediately applicable to any suspension problem, and you have the combination of product and knowledge that make Roebling the leader in the design and erection of suspension systems of *every* description. Your inquiries on any and all phases of suspension by wire rope or strand are invited. Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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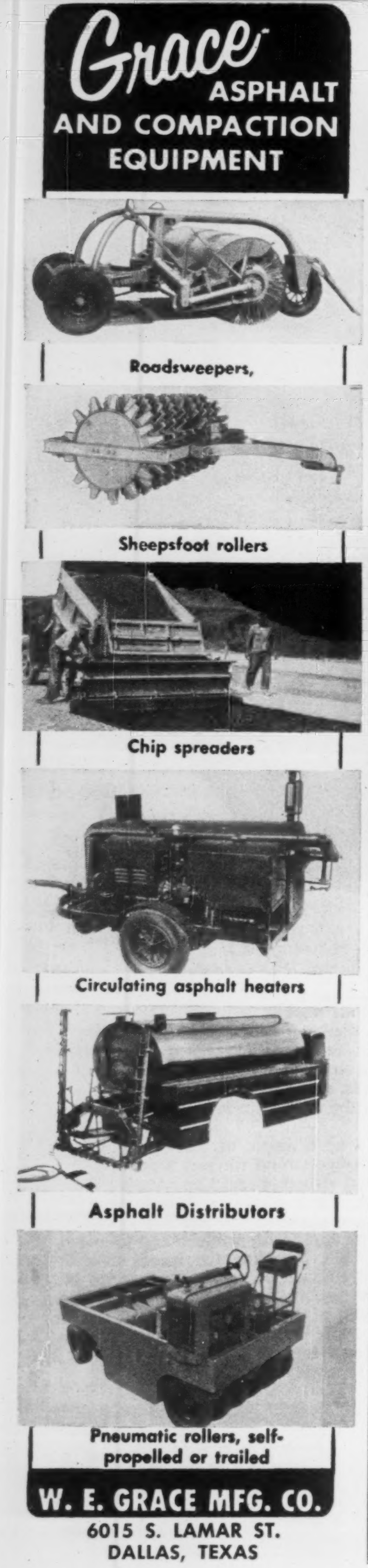
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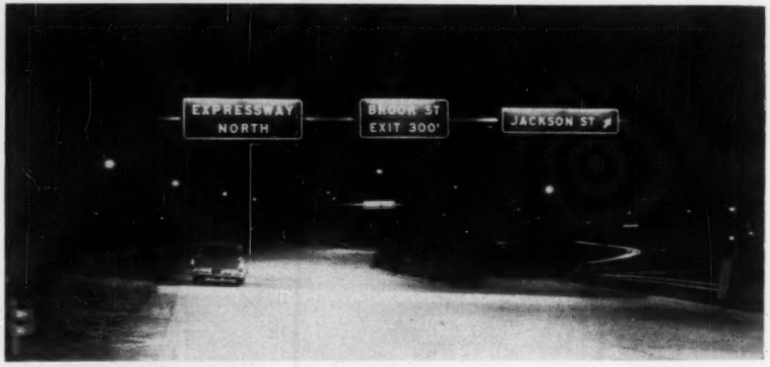
. . . King-size signs are particularly effective



LIGHTED SIGNS help alert the motorist to turnoffs well in advance, making sudden swerves from last minute decisions less likely.

TESTS carried out at "Crossroads of Light" facilities in Hendersonville, N. C., allow engineers to select lighting system on the spot to meet local needs.

the division point of the exit road with the main roadway. This will make the poles a little less vulnerable to the driver who may change his mind a little too late.

• **Acceleration, deceleration lanes** – At access road turnoffs and acceleration lanes there is a serious traffic hazard—the possibility of sideswipe or rear end collisions. The hazard can be reduced at night by letting the driver see the other fellow.

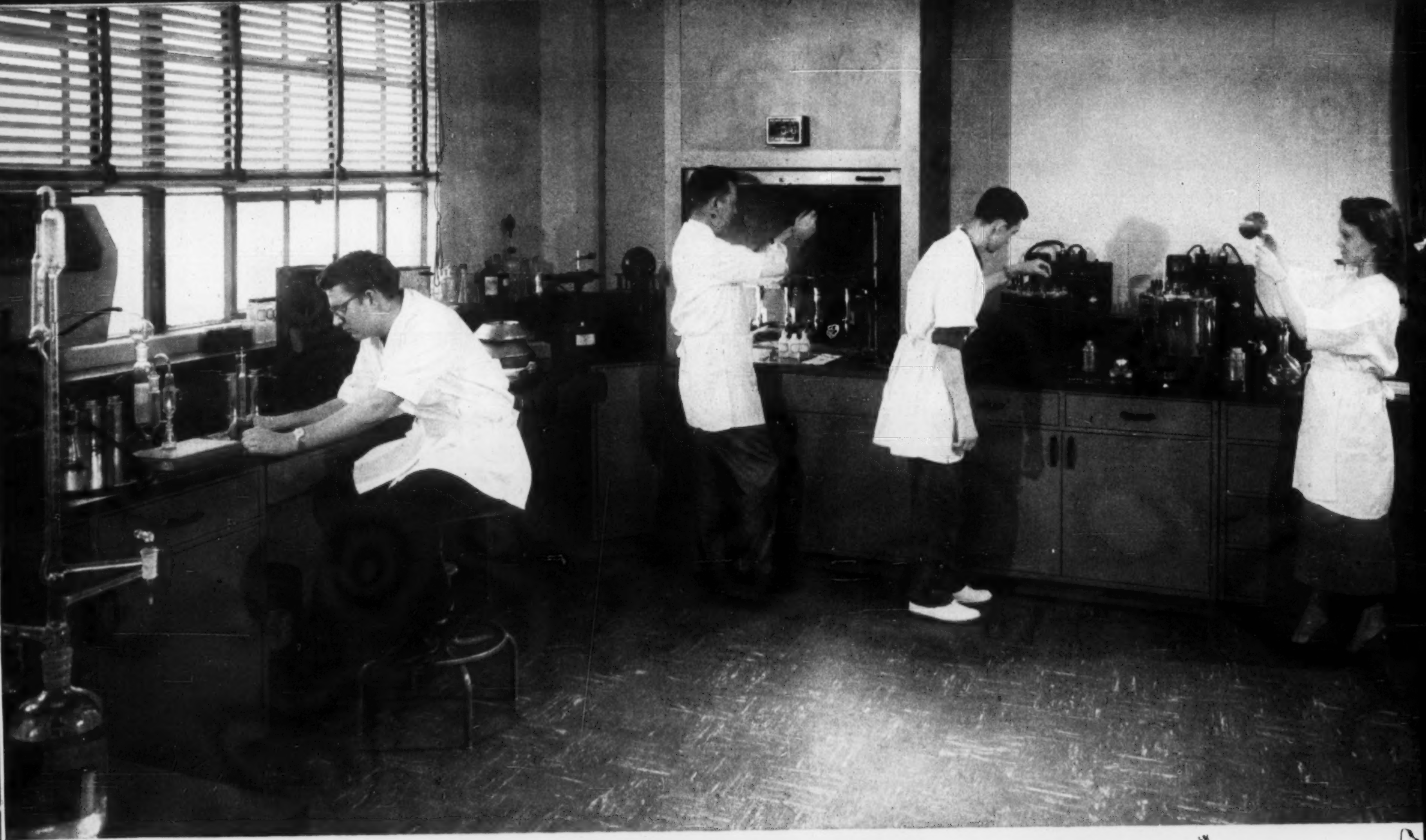
For the proper amount of surface detail, the highway lighting level should be at about one foot-candle at approaches and at the lane itself. This illumination should not be discontinued abruptly; taper it down gradually to keep the motorist from being blinded as he leaves the lighted area. In many cases where acceleration lanes are close together, tapering down for one lane can act as the build-up for the other.

• **Underpasses and tunnels**—Underpasses up to 75 ft long do not need lighting; conventional roadway lights can easily handle them. However, care should be taken that the light will reach under the structure without casting dark shadows. For longer underpasses and tunnels, fluorescent luminaires mounted parallel to the road usually will be most effective. At tunnel entrances, additional rows of fixtures will help build up the level at the portal during daylight hours.

• **Bridges and viaducts**—On double-deck bridges with stacked roadways, relatively low mounting heights make large, low-brightness fluorescent luminaires appropriate. On smaller bridges, the technique is about the same as normal road lighting, with lights located along the outer bridge rail and the median kept free and clear.

• **Illuminated signs** – Many engineers have found that king-size signs mounted above the roadway are particularly effective in directing the motorist to the proper lane—and when lighted at night they are even more effective.

An indecisive motorist in dense, high-speed traffic can very well cause an accident when he gets mixed up and doesn't know where to go at one of the more complex interchanges.



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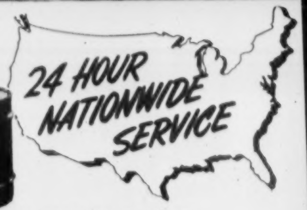

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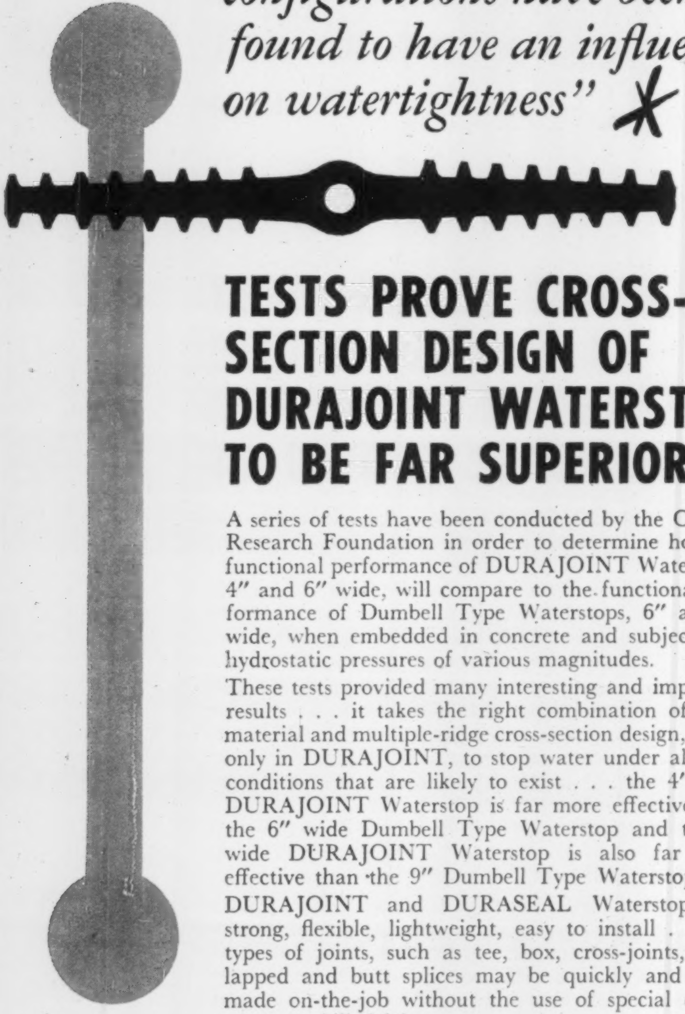

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TESTS PROVE CROSS-SECTION DESIGN OF DURAJOINT WATERSTOP TO BE FAR SUPERIOR!

A series of tests have been conducted by the Ontario Research Foundation in order to determine how the functional performance of DURAJOINT Waterstops, 4" and 6" wide, will compare to the functional performance of Dumbell Type Waterstops, 6" and 9" wide, when embedded in concrete and subjected to hydrostatic pressures of various magnitudes.

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DURAJOINT and DURASEAL Waterstops are strong, flexible, lightweight, easy to install . . . all types of joints, such as tee, box, cross-joints, overlapped and butt splices may be quickly and easily made on-the-job without the use of special equipment or skilled labor.

Be sure to investigate these interesting results yourself . . . just mail the coupon (below) today, for your free copy of Technical Report No. 4 that contains complete technical data, as to how the performances of waterstops compare, plus actual copies of the test reports. If you are interested in watertight waterstops, this report should prove to be one of the most interesting technical manuals you've ever read.

* Journal of American Concrete Institute, Discussion 52-7, V. 28, No. 6, Dec. 1956, Part II, Proceedings V. 52, Page 1151

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International

Caracas Still Dry

New water source becomes deficient in dry season

The city of Caracas, Venezuela's capital, is in the midst of one of its worst water shortages—only 18 months after a $42 million aqueduct was installed to supply the city "for years to come" (ENR July 12, 1956, p. 61).

Now in the second consecutive low rainfall year, the older sources of supply for the city are drying up and the new pipeline is delivering only 12 mgd of its 73 mgd design capacity. The aqueduct, a 17 mile long, 48 in. dia steel line, draws water from the Tuy River and lifts it 3,475 ft to the Mariposa Reservoir outside the city. Tuy River flow, unregulated by a storage reservoir now is reduced to a mere trickle.

The National Institute of Sanitary Works selected the Tuy as the new source of water on the basis of hydrologic records covering a period of 10 years. Records show the flow dropped to a minimum of 70 cfs (46 mgd) for one month during the annual dry season (December to June). Flow was recently only 18.5 cfs.

A temporary rockfill dam on a tributary of the Tuy is scheduled to be completed in August to prevent a repetition of the shortage next year. Construction of a permanent concrete dam is expected to be started in August.

It will cost $9 million and will be 150 ft high with a storage capacity of 56,000 acre-ft—enough to assure a year-round flow of 69 mgd in the line, even if this year's record low rainfall repeats.

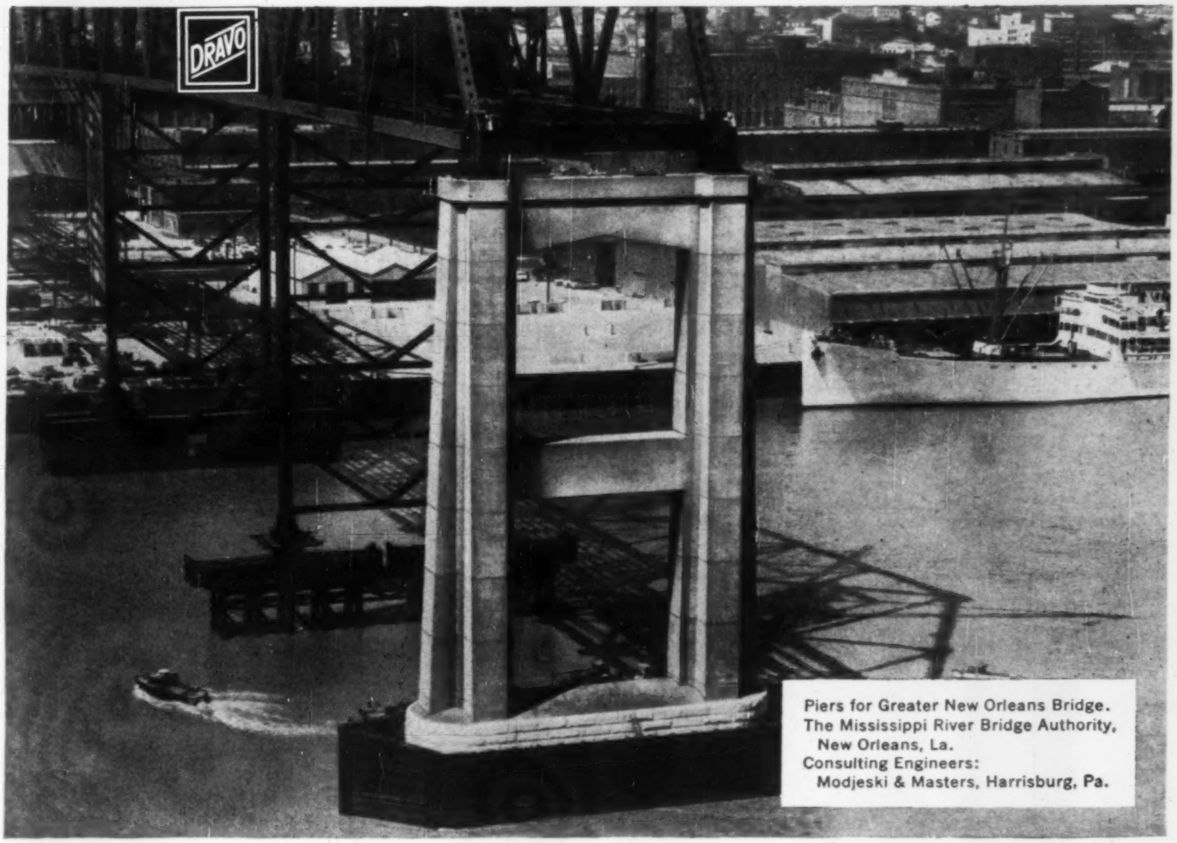
The Venezuela waterworks agency had planned the storage reservoir as a second stage of the Tuy project and assumed that 10 year flow records would hold up during the interim.

The start of the rainy season in June is expected to relieve the current water situation in Caracas—a situation that has resulted in strict rationing of water.

Italian Contractor Wins Hydro Job in Ethiopia

A $12 million bid to build a dam and power plant on the Auasc River at Koca, Ethiopia, has been won by an Italian firm, Impresit of Milan. Impresit now has the big Kariba project under way in Southern Rhodesia.

Another Milan group, Industrie Elettriche, will supply the Koca plant with three 20,000 hp turbines.



Piers for Greater New Orleans Bridge.
The Mississippi River Bridge Authority,
New Orleans, La.
Consulting Engineers:
Modjeski & Masters, Harrisburg, Pa.

34-story stepping stone for Nation's longest Cantilever Bridge

Extending 162 feet above low water and 180 feet below, this pier of steel and concrete will serve as a stepping stone for a new bridge across the Mississippi River at New Orleans. From it a four-lane highway bridge will take a giant step of 1575 feet to the next supporting structure on the opposite bank.

The new span, linking expressway systems on both sides of the river, will speed traffic into and out of New Orleans. The four main piers were constructed by Dravo at a cost of almost $7,000,000. Similar work on such notable substructures as the Natchez, Mississippi, and Newark Bay bridges, helps explain Dravo's reputation for difficult construction "in and around water."

For more information on any of the services and products for industry shown below, write to DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

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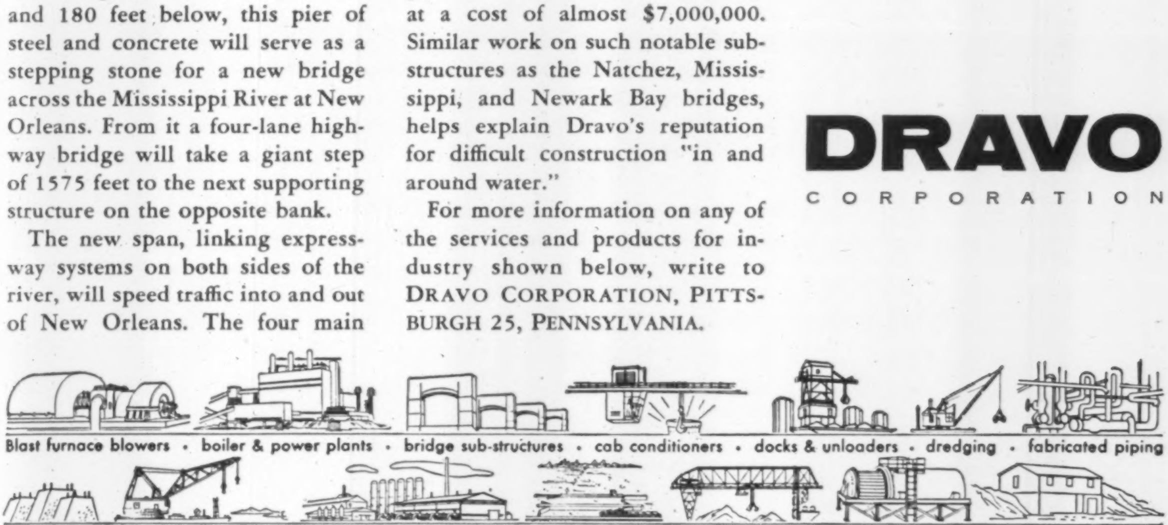

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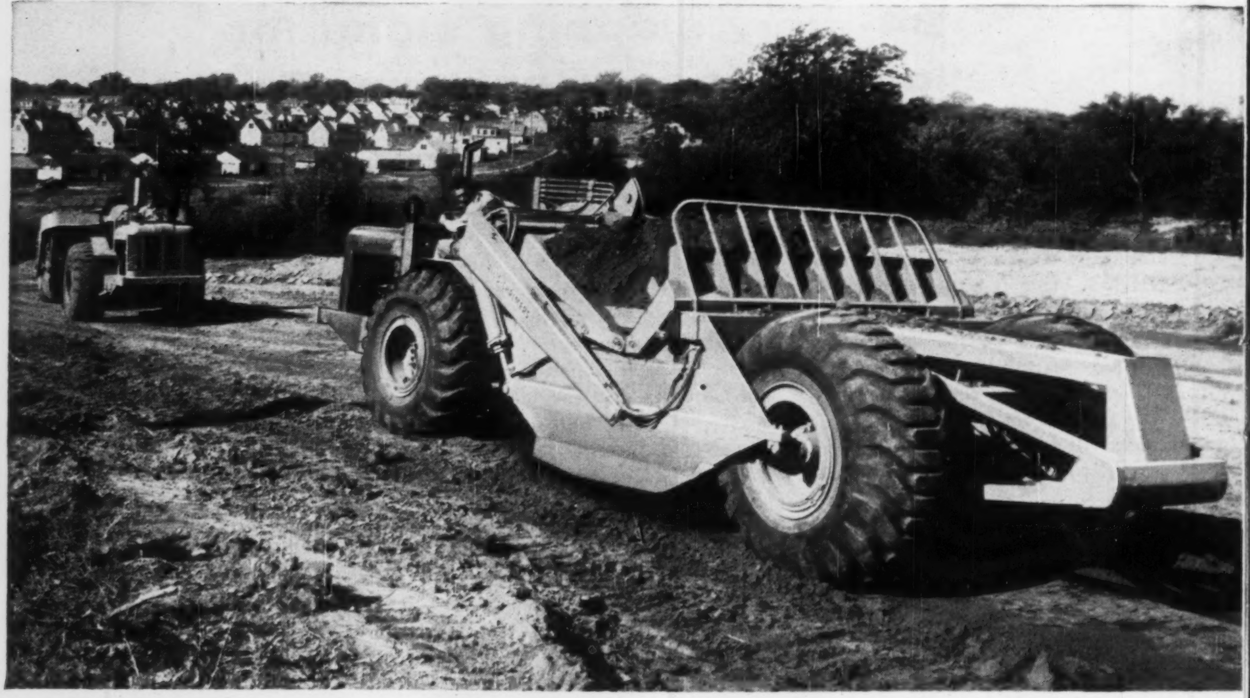
He moves big yardage on housing development

with two self-loading 7-yd Allis-Chalmers motor scrapers ... hauling 1,500 to 3,000 feet

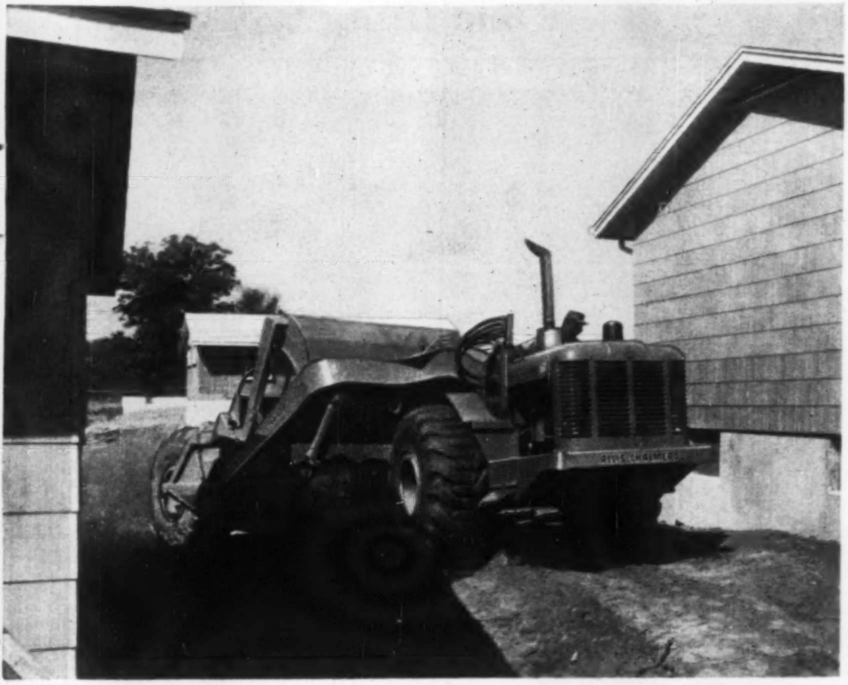
K. L. Perry
K. L. Perry Excavating Co.

On a new development location for a big residential subdivision, K. L. Perry Excavating Company of Kansas City, Missouri, has found a new and profitable earth-moving team—two Allis-Chalmers TS-160 motor scrapers. Perry bought them on the basis of a demonstration which proved their maneuverability, speed and ability to self-load. Now the TS-160's have sold him on dependability and economy, too.

One of Perry's self-loaded TS-160's leaves the cut as the other returns to keep up the 1,000-yard-a-day pace on Vineyard Woods job.



Look ahead...*move ahead*...and stay ahead with



Short turning radius (less than 25 ft) and positive hydraulic control make maneuvering through tight spots a simple operation for Perry's TS-160's.

The TS-160 is the only motor scraper near its size available with forced ejection and extra high apron lift that assures easy ejection of toughest material.

TS-160's move dirt faster . . . cut operating costs in half

Earth-moving operations in modern housing developments have to move fast to keep costs low . . . and to set the pace for production line methods in home construction. On the Vineyard Woods job, for instance, to maintain the building program, Perry had to average 500 cubic yards per day, hauling up to 3,000 feet.

His two Allis-Chalmers TS-160 motor scrapers handled it with plenty to spare. Self-loading, they frequently topped 1,000-yard production daily. At the same time, operating costs were cut in half compared to his previous equipment. Perry says his Allis-Chalmers motor scrapers are big producers . . . helped him finish contracts days ahead of schedule. He now bids and makes a profit on contracts he couldn't consider before.

Self-loading, compactness and maneuverability make TS-160's naturals for development work

Primary factors in Perry's choice of Allis-Chalmers TS-160's were their demonstrated high-speed and self-loading ability. However, since he's had them, other benefits have become apparent. Perry is particularly pleased with their maneuverability. They turn in less than 25 feet—a valuable timesaver in limited space on many housing development operations. Hydraulic power steering makes maneuvering in tight quarters easy and efficient.

They also save time and money between jobs . . . move on highway at up to 25.4 mph. Operator comfort and ease of handling were noted as outstanding by Perry and his crew.

Performance sold the machines . . . dependability proved their value

K. L. Perry checked them all when he was in the market for high-speed dirt-moving equipment. He says, "We were sold by demonstration that the Allis-Chalmers machines were best—but the real proof came with performance like we had on the Vineyard Woods development in Kansas City. We've had only routine maintenance on the machines in eight months since we bought them. They put us in position to get the 500-home Kentucky Hill job at Independence, Missouri."

This TS-160 motor scraper story is a good example of the value in talking things over with your Allis-Chalmers construction machinery dealer. He knows the earth-moving business and can help you choose the machines that will help you most. Ask him for a demonstration right on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS A-C

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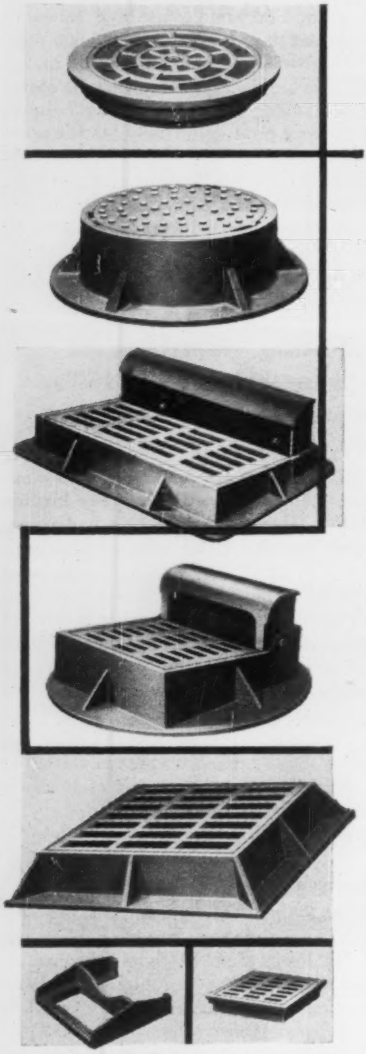

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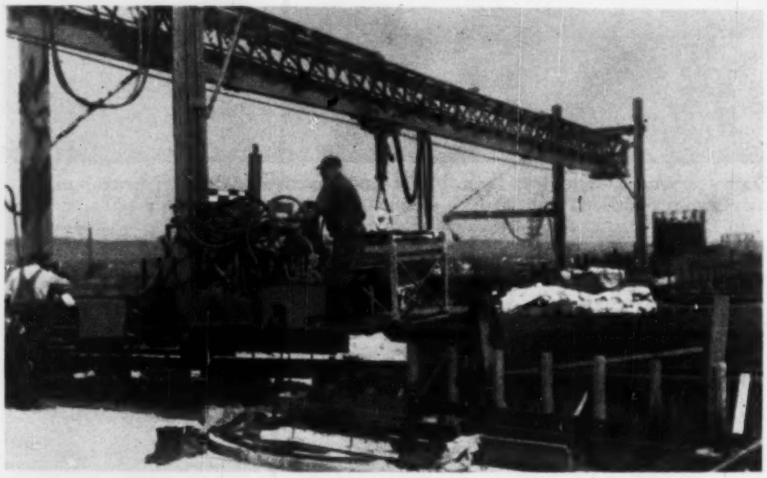

. . . Rig is erected on rails for fast concrete placement.

Portable Gantry Casts Bridge Decks

A new portable traveling gantry crane casts bridge decks with a 2 cu yd concrete bucket that can reach any spot on the bridge. It is being used by Winco Constructors, Inc., a division of D. W. Winkelman Co., Syracuse, N. Y.

The machine is speeding up operations and reducing labor costs at bridges on highway contracts taken by the parent company, reports Ralph W. Woodruff, general manager.

The crane is built so that the entire load of both machine and concrete is transferred to the bridge girders by two railroad rails held on specially-designed track supports. These pipe and steel plate supports hold the tracks above all reinforcing steel and sidewalk forms during the pour. This eliminates load from the falsework and the forms that carry the deck concrete.

An overhead trolley is used to place concrete at any spot on the bridge. The entire machine travels lengthwise with the bridge and the bucket travels across on the gantry at the same time.

Two end frames are designed with steel channels and are carried on two powered wheels. Each frame, designed to carry a load of 5 tons, supports the crossing overhead crane beam and the hydraulic power unit that powers all moving parts.

The top cross beam is built of a 15 in. I-beam carried by a V-type welded pipe frame that will support 5 tons at the center on a 65 ft span. The cross beam is made up of four 11 ft 2 in. sections and one 26 ft 6 in. section. It is adjustable for any width bridge—from 20 ft to 65 ft by removing various sections. Further refinement in adjusting the width is made by sliding the

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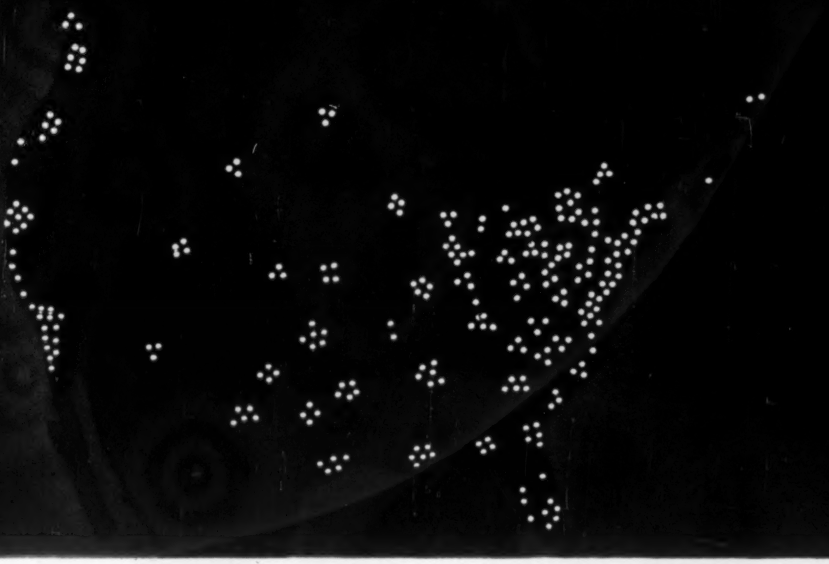
THE CONTINENT



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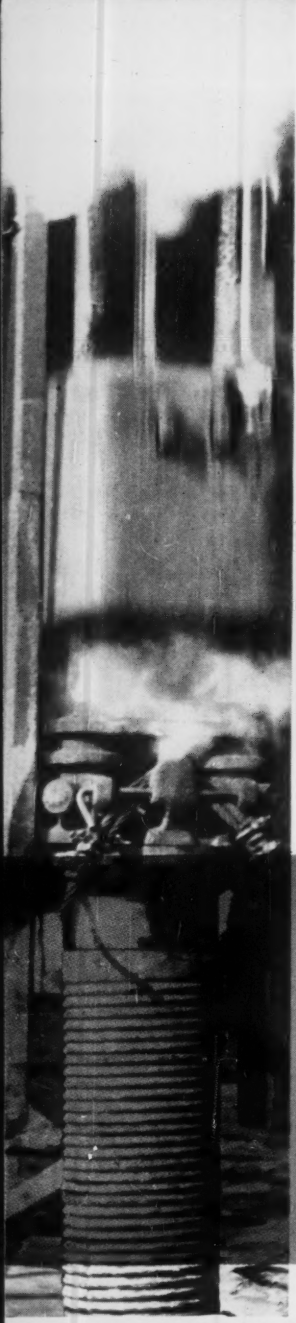

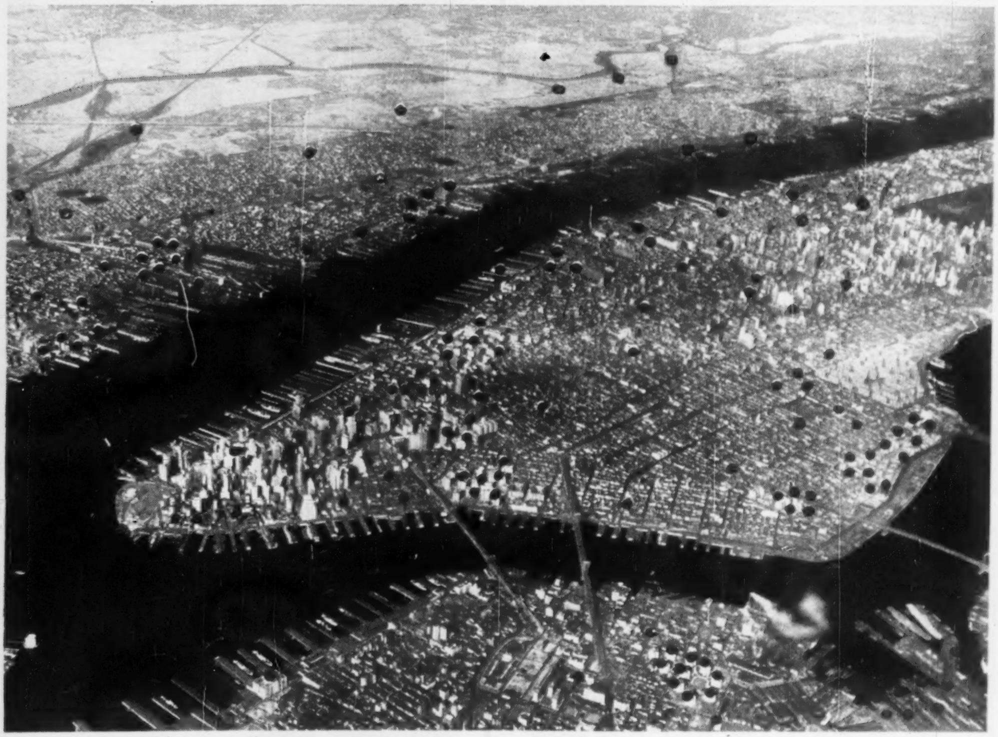

NEW YORK *1900 Structures rest on Raymond Foundations*

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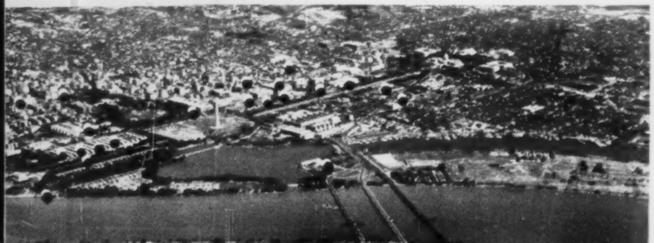
THE SKYLINE OF AMERICA

WASHINGTON *276 Structures rest on Raymond Foundations*



BOSTON *81 Structures rest on Raymond Foundations*

SAN FRANCISCO *565 Structures rest on Raymond Foundations*

Photos by
Fairchild Aerial Surveys, Inc.

KANSAS CITY
*130 Structures
rest on
Raymond
Foundations*

ATLANTA *75 Structures rest on Raymond Foundations*

NEW ORLEANS
*217 Structures
rest on
Raymond
Foundations*

CLOUD-PIERCING SKYSCRAPERS . . . sprawling industrial plants, expressways, bridges, housing developments, monuments, memorials and harbor installations are just a few of the many landmarks in both the United States and Canada which stand securely on Raymond foundations. For over 61 years, we have installed foundations for projects of nearly every description and size . . . large, medium, and small (a few of which are shown on this page). You'll find that we and we alone offer a complete foundation service, one for which we are entirely responsible. This service includes soil investigation, pile manufacture, driving piles and load testing. We would like to discuss your next construction project, to show how Raymond can serve you better and more economically, too. Contact the Raymond office nearest you or our main offices at 140 Cedar Street, New York 6, N.Y.

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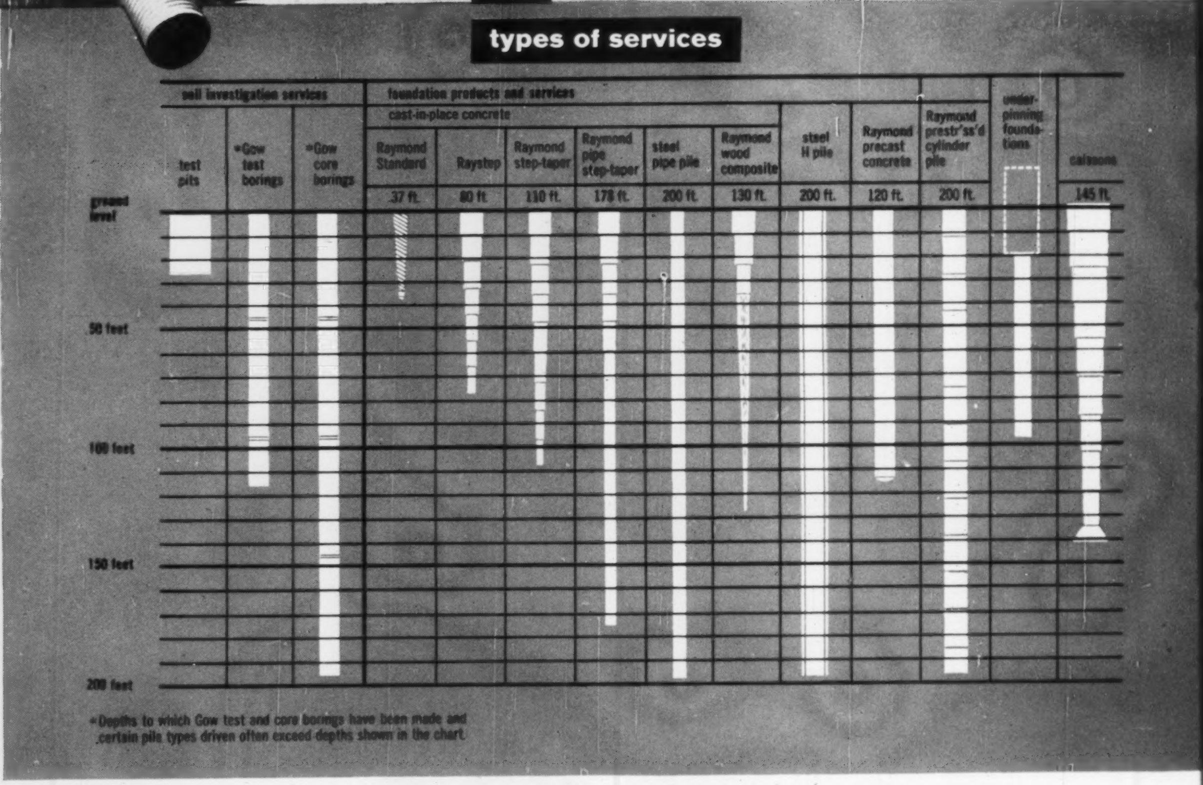

*Depths to which Gow test and core borings have been made and certain pile types driven often exceed depths shown in the chart.

REGARDLESS of what you are building or the subsoil conditions encountered, there's a Raymond Pile to carry your required loads firmly and economically. The six basic types of Raymond Piles are: the Standard Pile, Step-Taper Pile, Pipe Step-Taper Pile, Wood Composite Pile, Gow Caisson and our latest development, the Raymond Prestressed Cylinder Pile—designed specifically for offshore and waterfront projects and bridges. If you would like further information and specifications on Raymond Piles, just write Dept. X1, Raymond Concrete Pile Co., 140 Cedar Street, New York 6, N. Y.

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end frame on two angle irons welded on top 3 in. dia pipes by which the top beam is bolted to the end frame.

A double four-wheel trolley arrangement hangs from the 15 in. I beam to carry the concrete bucket. Also, an 8 in. hinged channel projecting arm is attached to the A frame to pick up the track ahead of the machine and to carry a ½ cu yd concrete bucket when needed.

The machine is powered by a 70 hp gasoline motor that pumps hydraulic fluid from a 30 gal storage tank to the hydraulic motors that power the wheels, bucket trolley, buckets and brakes.

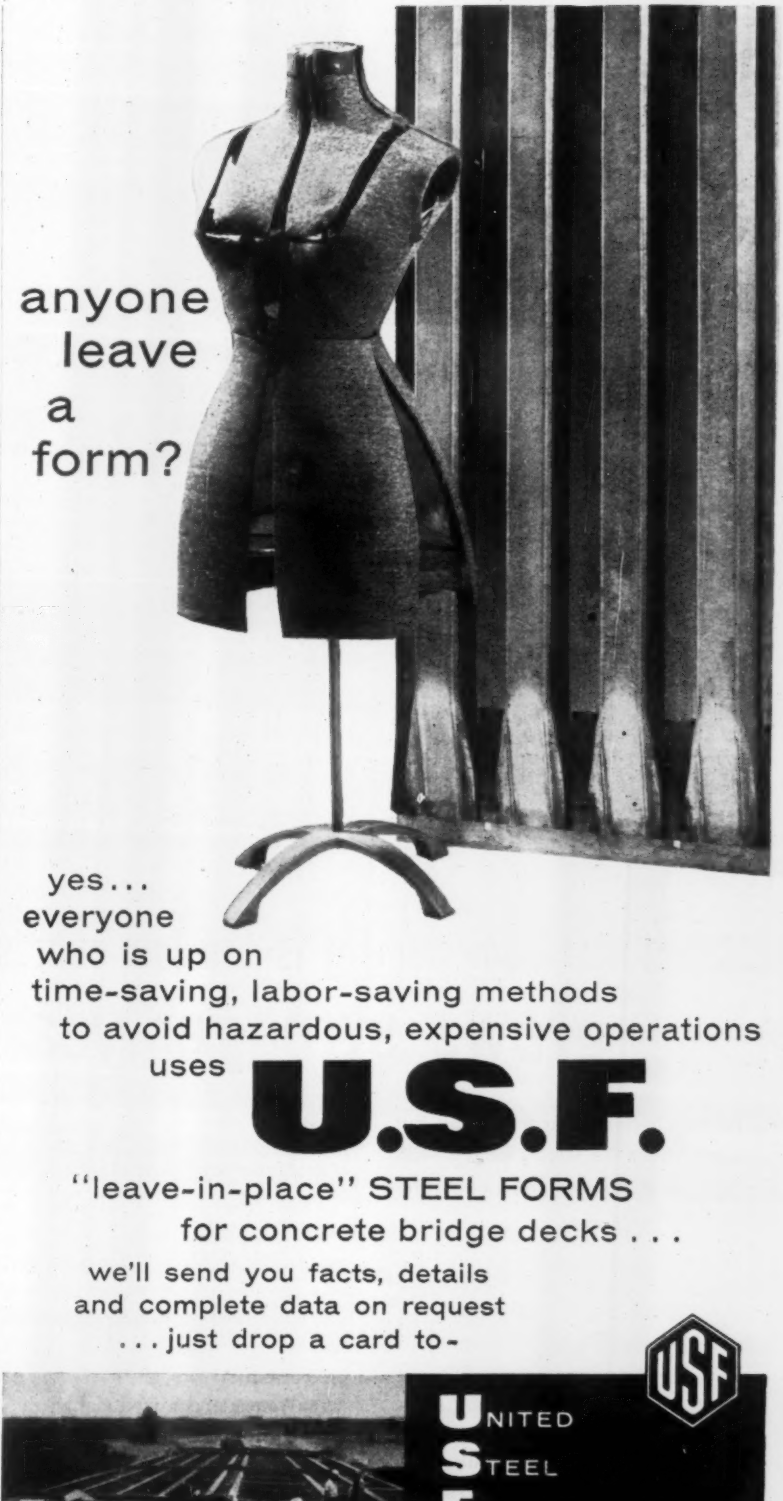
The end frames fold up so that with a specially-designed dolly attached to the end of the machine it can be transported over the road easily with a single tractor. The device has been patented.

River Model Solves Silting Problem

An exact model of the Latrobe River in Australia was built on a scale of 1:24 to find out how to stop continual silting up at the inlet to a huge paper mill pumping station.

The 1,000 yd long replica was so detailed no feature that could affect the silting was omitted. The same type of gravel and sand as in the river lined the model and flows to the actual hydrography of the river. Deflector plates in different sizes and positions were placed until, under varying flows, a maximum scour at the inlet of the intake tower was obtained.

As a result of the model studies, a 40 ft long wall of steel sheetpiling projecting 5 ft above the river bed was built slightly downstream of the inlet tower and angled at 45 deg to it to create scour at the inlet sill. This results in the formation of a deep hole against the inlet and keeps sand and silt from entering the plant's water supply.



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Now is the time for soil-cement...

New subdivision. Soil-cement would be a "natural" here.

Taxpayers in Daytona Beach, Florida, like these neat, low-cost soil-cement streets.

Soil-cement is the low-cost street that grows stronger year by year!

The maintenance crew can all but forget about the streets paved with soil-cement. It holds up like no other low-cost pavement.

Soil-cement gains strength from the minute it's placed. Core tests show it's often double in strength after several years of use.

Soil-cement is stronger inch for inch than any other pavement short of concrete. And its beam strength spreads the load over the subgrade. No softening, no potholing, no breakup in any climate. It's the 20-year-plus pavement. Maintenance costs *stay low.*

First cost? That's low, too, because in most cases 75% of your materials are free. You need only mix portland cement with almost any soil, then apply bituminous surface to the hardened base. In the case of old streets, the surfacing can be salvaged and mixed right in.

Paving is quick and easy. Contractors can build several blocks a day. Every day more engineers are finding that "now is the time for soil-cement." *Write for free booklet,* "*Soil-Cement Pavement.*" Distributed only in the U.S. and Canada.

Low cost . . . it's the 20-year-plus pavement for

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MODERN
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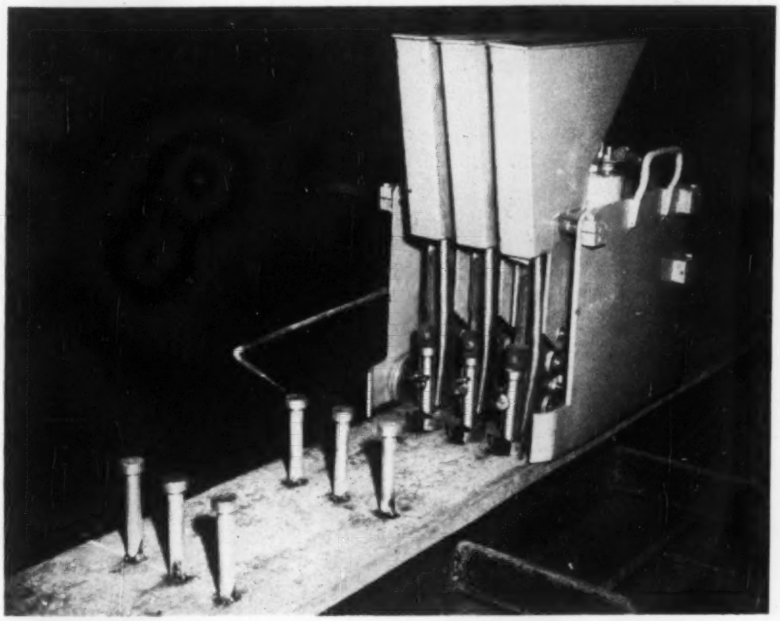
Dept. 7b-17, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete

New Products



Shear Connectors Go In Fast

Stud shear connectors for composite beam construction now can be arc-welded onto bridge beam flanges with assembly-line speed, ease and accuracy either in the shop or in the field with a new welding apparatus.

From one to six stud holding elements, spaced as required across the flange, can be combined in the apparatus, which is adjustable to any flange width.

Studs are placed and locked in the holders. Measured amounts of powdered flux are deposited around the studs from hoppers. A submerged arc weld fixes the row of studs, one at a time, into the beam. Arc flash and molten metal are confined for safety.

After a row has been welded, the rig is moved on four flanged wheels to the next position. The pitch—space between rows—is marked off by an adjustable pointer extending from the side of the apparatus.

A minimum of layout time and effort is called for. Chalk marks simply are made at pitch changing locations and the pointer reset when necessary.

Another advantage claimed is that since the operator does not touch the rig during the welding period, the possibility of fracturing a weld before it has cooled is eliminated.

Removable legs are provided by the manufacturer to permit using only one element at isolated locations. A modified rig also is available for use on beam flanges bordered by concrete forms. Power source is required with the stud welder. Eastern Constructors, Inc., Poland, Ohio.

Three-Axle Tandem Roller Vibrates Its Roller Unit

A machine known as the Model KX-25EV Vibrating Roller, having an independent power unit, mounts a vibrating roller between its end guide rolls. The power unit transmits power through V-belts to an eccentric axle shaft that runs through the center of the middle guide roll. This eccentric shaft turns at high speed, creating the vibrating action. A second set of bearings supports the roll and allows it to revolve freely, regardless of the travel speed developed or the vibrations per minute.

The vibrating unit is controlled from the operator's seat, vibrations per minute being regulated through the throttle and governor control cable from this position. The equipment also has a hydraulic control that permits the vibrating roll to be raised and lowered at the option of the operator. Thus the machine may be operated as long wheel base 15 to 20 ton, two-axle tandem with normal weight distribution. A steel frame mounting the engine drive has shock-absorbing bumpers and all accessories relating to the vibrating system. Buffalo-Springfield Roller Co., Div. of Koehring Co., Springfield, Ohio.

Diesel-Centrifugal Pump Now Comes in Two Sizes

Centrifugal pumps driven by air-cooled diesel engines with enough power for 24 hour continuous operation now are available in 15,000 and 20,000 gph sizes. Operating at 1,800 rpm, both pump and engine can be expected to outlast 5 to 10 equivalent gasoline units operating at 3,200 to 3,600 rpm, according to the manufacturer.

The 3 in. pump has a built-in suction check valve and an open type impeller. The shaft is protected with a renewable shaft sleeve. A suction hose strainer is furnished with each unit and all operating parts are serviceable from the front without removing the pump body. Empire Corp., 1566 S. 83 St., Milwaukee 14, Wis.

Hydraulic Valve System Brakes Concrete Paver

A hydraulically operated braking system designed to reduce operator fatigue is available as optional equipment to eliminate nearly all manual maneuvering in operating dual drum paver models.

Touch control valve levers replace mechanical foot pedal control in operating crawler traction brakes. Indicator lights, mounted behind the two valve handles, give the operator on-off brake information. When needed, both brakes can be set at the same time to hold the machine in place while paving on a grade. Blaw-Knox Co., 300 Sixth Ave., Pittsburgh, Pa.

Aluminum Clamshells Take Bigger Pay Loads

Aluminum clamshell buckets are now available for handling coal and other free-flowing materials. The obvious advantage of their use is in reducing the dead weight of the bucket and increasing the crane's pay load.

Bucket sizes range from 3 cu yd to 10 cu yd capacity. Cutting edges and surfaces exposed to rough treatment are made of steel to hold up under abuse to which buckets are subjected. Owen Bucket Co., 6001 Breakwater Ave., Cleveland 2, Ohio.

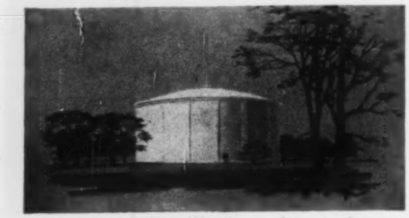
(New Products continued on page 72)

Prestressed Concrete Tanks Show Big Savings

Maintenance Costs Cut By 75%

Over a 50 year service life, a prestressed concrete tank will show a 75% saving in total maintenance costs over a steel tank of the same capacity. In today's economy, such a long range saving has tremendous appeal to municipalities and water companies throughout the world. When your tank requirements are in the planning stage, these calculated maintenance costs should be considered. Average yearly maintenance on a 3,000,000 gallon steel tank is estimated at $2500 per year at current prices. For a prestressed concrete tank, maintenance is negligible; however, occasional painting for color effect may be desired.

When the charges for servicing the initial cost plus relative maintenance allowances are plotted, the prestressed concrete tank will often show a lower out of pocket cost to the owner in less than 5 years. When these costs and their increases are extended for an expected service life of 50 years, the savings to the owner with prestressed concrete are enormous.



The prestressed concrete tank is also a good looking tank . . . it is inherently strong and extremely stable . . . it is designed and built for permanence.

And, 75% of the contract price is spent right in your local community . . . construction is done with materials and labor available locally.

Write today for more information on Preload Prestressed Concrete Tanks.

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HERRICK IRON WORKS
28400 Clawiter Road, Hayward, California
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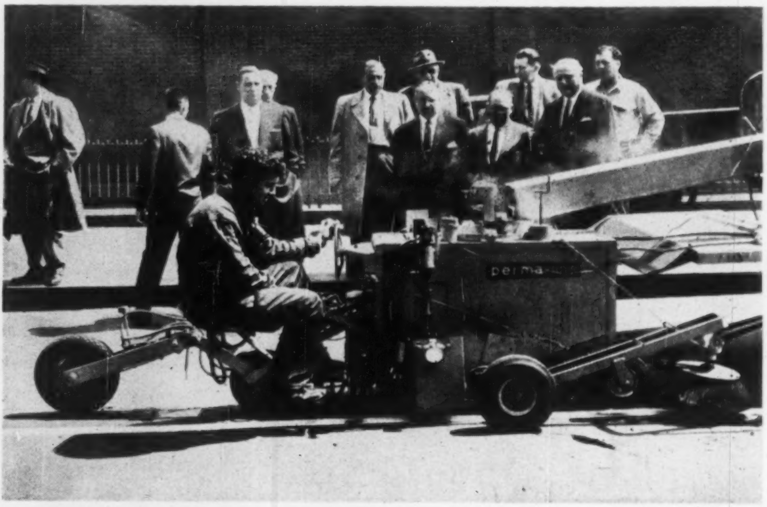
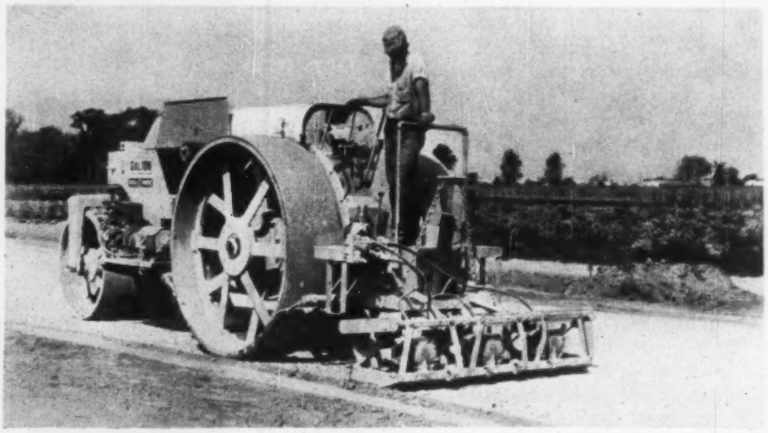
Jefferson Tower Bldg., 351 Jefferson, Dallas, Tex.
THE CANADA GUNITE COMPANY, LTD.
7325 Decarie Boulevard, Montreal 16, Canada



Line Marker Goes at Fast Rate

The Perma-matic Liner is claimed to put down 25,000 lin ft of traffic lane dividing line in a normal working day. One man, riding the machine, regulates the flow of marking compound, width of line and length of each section.

Perma-Line, a non-paint, plastic thermo-compound made by the same company is used. It comes in bricks that are melted in a master kettle on the truck used to tow the applicator and then fed into the applicator. There it is stirred, thinned and conditioned before being applied. The whole operation is controlled by the applicator operator by means of a phone setup between the truck driver and himself. Veon Chemical Corp., Long Island City, N. Y.

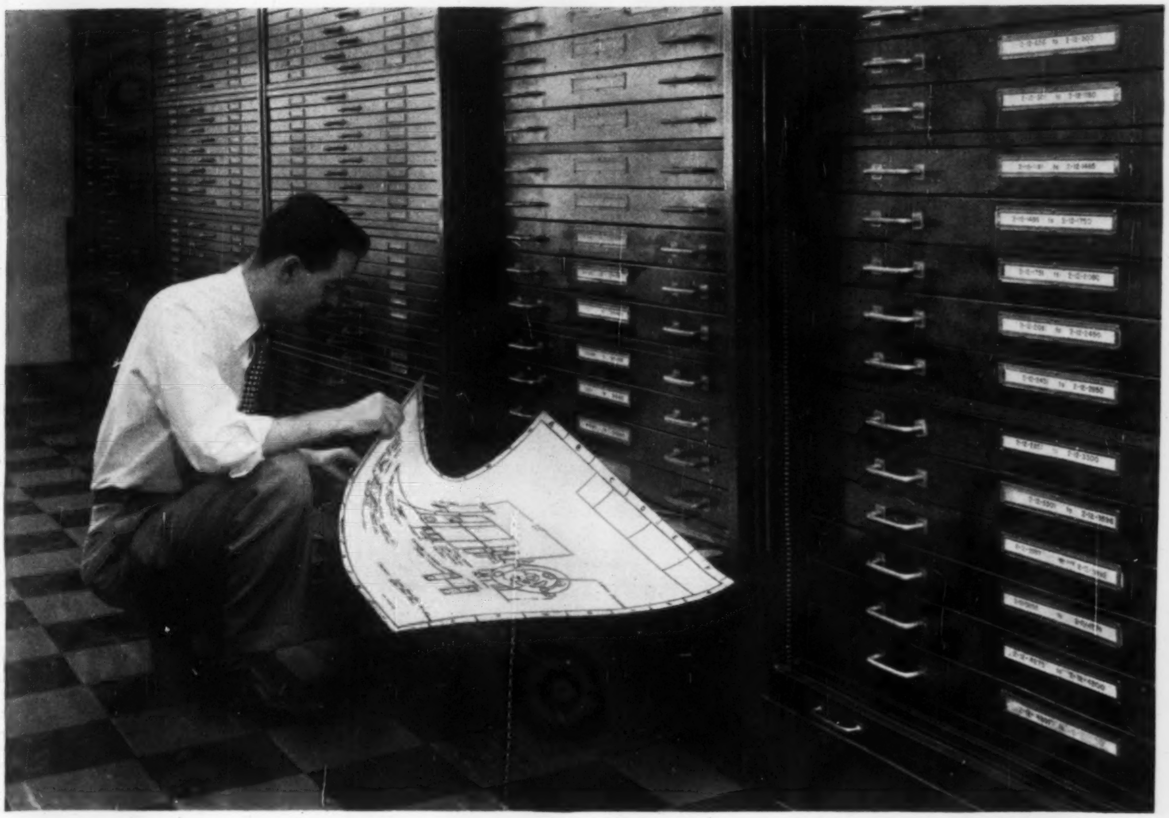


Roller and Vibrator Are One Machine

A two-in-one compaction machine provides both static and dynamic compactive effort through a combination three-wheel roller and an electric vibrator. The manufacturer claims that most federal and state density specifications are attained in one pass per lift.

The vibratory compactor workhead is made up of three, 26 in. wide steel plate shoes, individually vibrated by electric motors mounted on each shoe. The unit delivers 4,200 three-ton blows per minute. It is connected to the rear of the roller where it may be raised for traveling or to allow use of the rollers alone. Galion Iron Works and Manufacturing Co., Galion, Ohio.

(New Products continued on page 74)



How filing a drawing can shorten its life

EVERY TIME one of your pencil drawings is pulled from the files—or is run through a blueprint machine—it loses detail, ages a bit.

As more and more graphite wears off—and the drawing picks up stains and creases—your prints become increasingly harder to read. Costly mistakes are only a wrong guess away.

Impossible situation to lick? Not at all. In many drafting rooms original drawings never grow old—never have to be retraced—because Kodagraph Autopositive Paper intermediates are made and used for all printmaking and reference work. These "master" copies are made directly from your originals without a negative step or darkroom handling. Their dense black photographic lines—on a white, translucent base—will not smudge or smear . . . will show no loss of detail even after hundreds of trips to the print room or drafting board.

Costs are trifling—pennies per sq. ft. A fraction of what a new drawing—or a re-traced drawing—costs! Check with your print room, or local blueprinter, today.

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Kodak
TRADEMARK

specification sand production in the Japan Alps

Sizer operation was proven out successfully in this pilot plant.

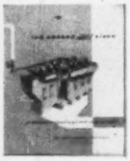
four Dorrco Jet Sizers process 690,000 tons for new dam construction...

The Kansai Electric Power Company has recently started construction of the new Kurobe No. 4 Dam on the Kurobe River, Toyama Prefecture in the heart of the Japan Alps.

The 192 meter high dam will require for completion a total of 690,000 metric tons of specification sand, all of which will be processed by four 16½ pocket Dorrco Jet Sizers. Feed to the units consists of 200 metric tons per hour of river sand and manufactured sand. Accurately sized products down to 200 mesh are dewatered and blended to a fineness modulus of 2.51.

The overall low operating costs — particularly the more effective hydraulic water utilization inherent in the Dorrco Jet Sizer — render the unit ideal for operations in relatively remote areas such as the Kurobe Dam installation.

For complete information on this most effective tool for concentration and sizing of 8 mesh and finer particles in the metallurgical, chemical and non-metallic fields, write for a copy of Bulletin No. 2342. Dorr-Oliver Incorporated, Stamford, Connecticut.



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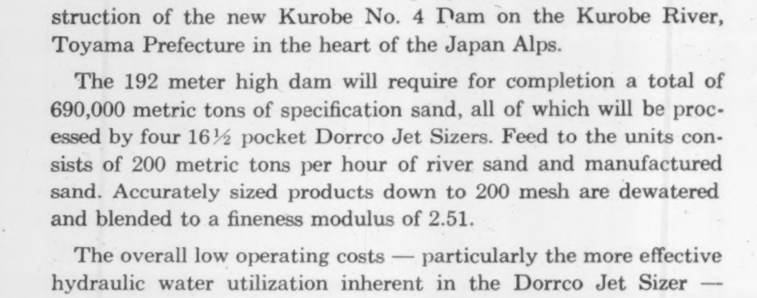


Eight On-the-Job Changes For Multi-Purpose Loader

A multi-purpose tractor loader that can convert into eight different machines easily and quickly now is on the market. Known as the "Work-Bull 1001", the equipment can be altered to serve as a loader, street sweeper, backhoe with its own backfill blade, fork lift, angle dozer, crane, rotary boom, and a loader with a scarifier attachment.

The operator can change directions without shifting by switching from one foot pedal to the other. Hydraulically actuated reversing clutches combine with an accelerator-directional foot pedal.

Power steering maneuvers the 1001, and individually controlled brakes and five-speed transmission both in forward and reverse add to precision of control. A torque converter provides extra torque when required by adjusting power automatically to meet the load.

A nitrogen accumulator cylinder serves as shock absorber for the hydraulic system when the Work Bull is loaded and going over rough terrain. MASSEY-FERGUSON INDUSTRIAL DIV., 1009 S. WEST ST., WICHITA, KAN.

New Generator Steams 150 lb in 20 Minutes

A new 52 hp portable steam generator can reach normal operating pressures in 20 minutes from a cold start, according to the manufacturer.

The machine uses two-pass down draft and has a modified scotch marine type boiler. It is designed for 163 psi and operates at 150 psi with a heating capacity of from one to three 10,000 gal tank cars.

Known as Model SG-52, it is available on either a skid mount or on a semi-trailer, with manual or fully-automatic operation. BROS. INC., ROAD MACHINERY DIV., 1057 TENTH AVE., S.E., MINNEAPOLIS, 14, MINN.

Forty-six of these all-welded wrought iron trash racks guard the entrance to four 24⅔-foot diameter water intake tunnels at the Missouri River's hydroelectric generating station, Fort Peck Dam, Montana.

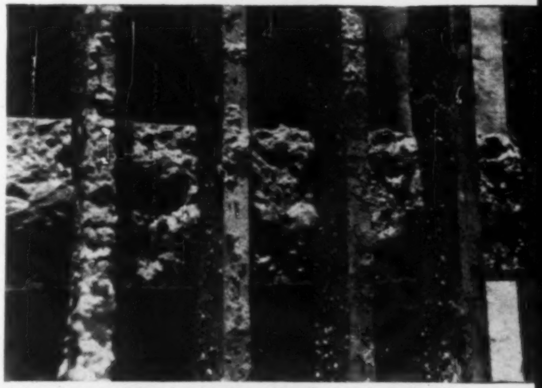
Wrought Iron trash racks pass rigid inspection after twenty years use at Fort Peck Dam

The assignment was corrosive. Guard duty at the bottom of the Missouri River—twenty years of it. In a hard-to-get-at position for thorough inspection, until just recently.

That's the service record of wrought iron trash racks used to prevent powerhouse turbine damage at the hydroelectric generating station, Fort Peck Dam, Montana. And the only maintenance required—after this bout with marine-type corrosion—was a cleaning with high pressure water spray.

Briefly, here's how U. S. Army Corps of Engineers carried out the inspection. In bringing the racks to the surface for their first complete examination, divers connected lifting equipment to lifting holes in the tops of the racks. They were then removed from the tunnel intakes, raised to the surface and put ashore. After inspection (the rating was excellent), the racks resumed their tour of corrosive duty at the bottom of the muddy Missouri.

Wrought iron won't perform miracles. No metal can. But wrought iron *will* provide you with a more economical run for your money than any other metal you care to name. Write our Engineering Service Department for specific information. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.



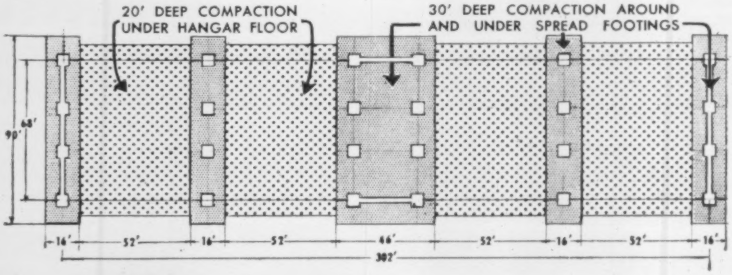
Laboratory analysis of a small sample of tubercle material which had formed on the racks revealed that at no place where the bars had been scraped were the pits under the tubercles more than 1/32-inch deep.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE AMBALLOY STEEL PRODUCTS AND PVC PIPE

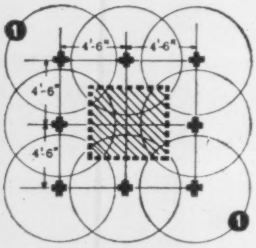
Corrosion costs you more than Wrought Iron

Alert Hangar, Ernest Harmon Air Force Base, Newfoundland, Canada.
Engineer: U. S. Army Corps of Engineers, Eastern Ocean District.


20' DEEP COMPACTION UNDER HANGAR FLOOR
30' DEEP COMPACTION AROUND AND UNDER SPREAD FOOTINGS
90'
68'
16'
52'
16'
52'
46'
52'
16'
52'
16'
302'

Vibroflotation®

used to underpin existing foundation of an Air Force hangar in Newfoundland.



✚ *POINT OF VIBROFLOT PENETRATION*

① *ANTICIPATED EXTENT OF 70% RELATIVE DENSITY*

Typical compaction pattern used to underpin existing 5'6'' sq. spread footings.

Underpinning of foundations was accomplished by VIBROFLOT compaction under and around existing footings for an alert hangar at Harmon Air Force Base. 650 penetrations were employed to depths of 20' and 30' to consolidate 24,820 cu. yds. of loose sand fill. A saving of $25,000 was realized over the alternate piling solution.

Proven Applications

Deep Foundations • Dams
Bridges • Airports • Tunnels
Commercial Foundations
Industrial Foundations

Write for Booklet E-16

VIBROFLOTATION FOUNDATION CO.

930 Fort Duquesne Boulevard
Pittsburgh 22, Pa.

ATlantic 1-2500

Publications

Cylinders—Hydraulic cylinders from 1½ to 12 in. dia and rated from 500 to 5,000 psi are completely described, including useful data that have not been available until now. A convenient feature is a four page gatefold, center spread that provides complete mounting and dimensional data, including piston rod dimensions, styles and a complete list of the hydraulic cylinders carried in stock. Bulletin JH-104N, 32 pages. MILLER FLUID POWER DIV., 2040 N. HAWTHORNE AVE., MELROSE PARK, ILL.

Welding wire guide—Pocket size, indexed for quick reference to technical information on chemical composition, mechanical properties, operating procedures. 84 page booklet. ADC 873. AIR REDUCTION SALES CO., 150 E. 42 ST., NEW YORK 17, N. Y.

Dew point measurement—Description of the Alnor Dewpointer includes illustrations, specifications and an explanation of the method used to obtain the dewpoint. 8 page bulletin. ILLINOIS TESTING LABORATORIES, INC., 420 N. LASALLE ST., CHICAGO 10, ILL.

Pipefittings—Listing of pipe fittings, hose and other supplies for the hydraulic pump operator, plus sizes, details and drawings of each type of equipment. 22 page bulletin 600. MECKUM ENGINEERING, INC., 53 W. JACKSON BLVD., CHICAGO 4, ILL.

Backhoes and Loaders—Description of Ottawa's 1958 line of truck-mounted backhoe, tractor mounted backhoe and front end loader. Three 4 page bulletins, forms LXCH-1-58, LX-1-15M-458 and UL-1-10M-458. OTTAWA STEEL DIV., YOUNG SPRING & WIRE CORP., OTTAWA, KAN.

Soil sampling—Describes and illustrates a hand operated soil sampling kit that contains 12 different tools packed in a compact steel carrying case. Tools recover 1½ in. dia samples. 4 page Bulletin 26-R. ACKER DRILL CO., INC., Box 830, SCRANTON 2, PA.

Truck sections—Rebuilding front ends of trucks to give truck new appearance and design at lower cost than for complete new unit. Discusses methods and equipment needed for replacement of front end sections of old trucks. 4 page catalog, Form CR-376-G. CONSUMER RELATIONS DEPT., INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO, ILL.

What beats 4 men?

Anybody with a Le Roi triple tamper

The new Le Roi OT11 triple tamper can out-tamp a whole gang of guys on any kind of a backfill job — deliver more compacting blows and pound down more dirt than 4 men with single tampers.

There's no strain on the operator, either. The OT11 is so well balanced that it walks along by itself, easily guided by the motorcycle-type handlebars with handgrip control. And the built-in oversize line oiler gives full-shift, full-throttle lubrication — saves the trouble and downtime of frequent filling. See the powerful OT11 at your Le Roi distributor, or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

AT-717

LE ROI
NEWMATIC
AIR TOOLS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

This "*Automatic*
your truck more

Now available in GMC, Chevrolet, Dodge and Ford... Allison fully automatic transmission pays for itself well within the first 12 months of operation

- "33⅓% more payload per trip," says West Coast contractor.
- "50% less engine maintenance," reports Rocky Mt. trucker.
- "75% lower brake maintenance," claims Utah ore hauler.
- "100 extra miles per day," indicates Michigan car-haul.
- "3 trucks do the work of 4," says New Jersey sand hauler.

Allison

Brain" gives get up and go...

ALL over the country truck owners are acclaiming the Allison Automatic as the greatest transmission advance in 30 years. In every type of service — local and long distance — in city traffic and over the highway — in the deepest mud and the roughest road — the Allison fully automatic transmission is bringing America *a new kind of truck.*

With the Allison Automatic, your driver merely selects the range — the "Automatic Brain" does the rest. It "senses" the right gear for *every* combination of speed, load and grade. Shifting is automatic — exact — every time. Engines *can't* lug or race. Average elapsed trip time is decreased 18%. And direct-drive lockup engages in every forward gear for maximum fuel economy.

It multiplies engine torque up to 15 times — delivers maximum power right from a dead stop. It gets the load moving instantly — keeps it moving smoothly. It cushions the engine and drive line from costly shock damage — increases engine life 35%.

Its built-in hydraulic retarder permits faster — yet safer — descents on even the steepest grades. It slows your truck in traffic without touching the service brakes. And it cuts brake maintenance more than 50%.

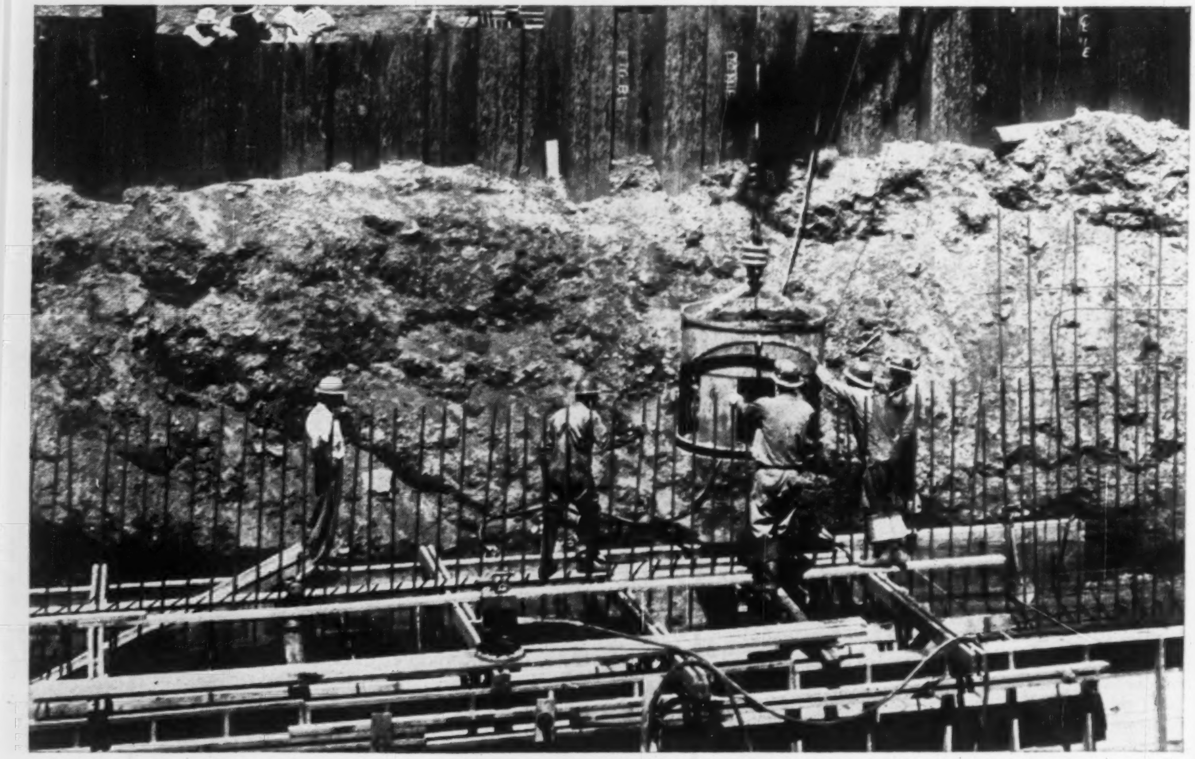
The Allison Automatic is the first fully automatic transmission specially designed for medium and heavy-duty trucks. It's the first transmission that lets you take *full* advantage of today's high-torque truck engines. It was developed from more than 10 years' service in the heaviest military and off-highway vehicles.

GMC, Chevrolet, Dodge and Ford have engineered the Allison Automatic into their newest medium and heavy-duty trucks, school buses and other commercial vehicles. It is also available in an integral engine-transmission power plant with Chrysler and Ford industrial engines.

Find out how an Allison fully automatic transmission can repay its cost many times over in *your* operation. See your dealer or write:

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana

FULLY AUTOMATIC TRUCK *Transmissions*



Contractors get better concrete jobs faster no matter what the weather with Columbia Calcium Chloride added to the mix.

STAY AHEAD OF PEAK-SEASON SCHEDULES

COLUMBIA CALCIUM CHLORIDE helps you complete jobs days sooner

Your tightest working schedules of the year are just a flip of a calendar page ahead. This makes today a fine time to plan ways to cut time on your summer concreting. And you want to save that time without shaving job quality.

The higher early strength of Columbia Calcium Chloride treated concrete saves more time *and* upgrades quality, too. Take concrete made with Type I cement. When treated, its three-day strength matches normal seven-day results. With Type III (High Early Strength) cement, the treatment produces normal 28-day moist-cured strength in just 3 . . . yes, 3 . . . days! Columbia Calcium Chloride gives much better curing, releasing the normal heat of hydration earlier. Moisture loss through evaporation is retarded by 50% at highly important early stages. This is vital in reinforced structural work, where highly stressed members are subject to early moisture loss.

Check all these points: greater strength in half usual times, higher ultimate strength, earlier form removal, faster and easier finishing. How about it? Isn't it the perfect time to analyze your own batching procedures, or talk to your ready mix supplier about adding Columbia Calcium Chloride? You can get immediate, detailed information from your nearest Columbia-Southern district office or from our Pittsburgh address.

Reduce barricade time and open concrete surfaces for service days sooner by using Columbia Calcium Chloride.

COLUMBIA-SOUTHERN
CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • San Francisco
Chicago • Cleveland • Boston • New York
St. Louis • Minneapolis • New Orleans • Dallas
Houston • Pittsburgh • Philadelphia • Charlotte
IN CANADA: Standard Chemical Limited

Legal

Federal Tax Liens

Priority with respect to mechanics liens depends on how and when filed

Once a government tax lien is properly filed, no subsequently recorded local lien or claim can prevail against it.

The question often arises when mechanic's liens stem from a job performed by a contractor who owes the government for unpaid withholding or social security taxes. Which takes priority as a claim against money owed the contractor under the contract?

Here's the way a New York court resolved the problem:

The Fleetwood Paving Corp. owed the United States government for unpaid withholding and social security taxes. Between December, 1951, and March, 1952, the local tax collector received notice of assessments of unpaid taxes against Fleetwood. Shortly thereafter, Fleetwood, as general contractor, entered into a contract for remodeling a restaurant. In August and September of 1952, Fleetwood arranged for Home Maintenance Co. and Colonial Sand and Stone Co. to furnish labor and materials for the remodeling job.

On October 31, 1952, the United States filed a lien against Fleetwood for its unpaid taxes in the office of the clerk of the City of Mt. Vernon, where Fleetwood maintained its place of business. Some days later, having been paid only a part of what was due them, Home Maintenance and Colonial Sand filed mechanic's liens against the property, the former for $1,400, the latter for $896.25.

In June, 1953, separate suits were started by Home Maintenance and Colonial Sand to foreclose their mechanic's liens, whereupon the party for whom the work was done deposited $2,200, the amount still owing to Fleetwood, with the county clerk to the credit of both subcontractors. Upon the application of the owner, the government was substituted as the defendant in the place of the owner of the property, leaving the court to determine who had a priority to this money, the subcontractors or the government.

The trial court held that the subcontractors had a prior right to the money on the ground that the government's tax lien was ineffective since it had not been filed in the county clerk's office, the place designated by local statutes for the recording of liens against real property. This judgment was affirmed by the Appellate Division (2 A. D. 2d 747, 153 N.Y.S. 2d 270), that court holding that the money deposited by the owner was a substitute for its real property and the government had no lien on such property.

Both decisions were reversed by the Court of Appeals,[1] which held that on the basis of the controlling federal statute, as well as federal decisions construing it, the government tax lien attached to the debt owing Fleetwood and that the lien was entitled to priority.

The Court of Appeals quotes numerous cases which hold in effect that the rule is firmly established that once a government tax lien is properly filed, no subsequently recorded lien or claim can prevail against it.

(1) Aquilino v. United States, 146 N.E. 2d 774, New York Court of Appeals, Dec. 5, 1957.

General Contractor Made Whole on Default of Sub

If a subcontractor refuses without legal justification to perform the work he has agreed to do, the general contractor may employ another subcontractor and charge the defaulting sub with the increased cost, if any, of getting the work done.

A typical situation is this: Before submitting a bid for a general contract, the general contractor solicits a bid from a subcontractor who agrees to perform that part of the work if the contract is awarded to the general contractor. After the award, the sub refuses to undertake the work. Another sub has to be found. The new sub may charge more than the original estimate.

This is what happened in an unreported New York case. Original sub had agreed to do the lathing and plastering work on a high school project in Poughkeepsie for $35,397. After his default, the work was completed for $50,000 by another subcontractor.

The general contractor sued the original sub for damages and recovered the difference between the two amounts.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.; *Legal Phases of Construction Contracts; Legal Guide for Constructors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

NO MAINTENANCE WHATEVER...

Adlake
America's Finest
Aluminum
Windows

...a window for every need

All Adlake aluminum windows require no painting, no maintenance. They will not rattle, warp, stick, swell or rot. The sliding sections have patented serrated guides, and both sliding and pivoting sections have double weatherstripping of rubber-impregnated high pile woven wool, impervious to the elements—a combination insuring noiseless, fingertip operation and completely satisfactory performance indefinitely. The following Adlake aluminum windows satisfy every need in modern fenestration:

Adlake Reversible Windows (*above*) Both sides may be washed from the inside.

Adlake Projected Windows Available with panes projecting inside or out. Vents are weatherstripped.

Adlake Double Hung Windows Minimum air infiltration, no water intrusion, and noiseless, fingertip operation.

Adlake Curtain Wall Windows These give the airy "all-window" effect appropriate in this modern type construction.

Stationary Windows—for any fixed installation.

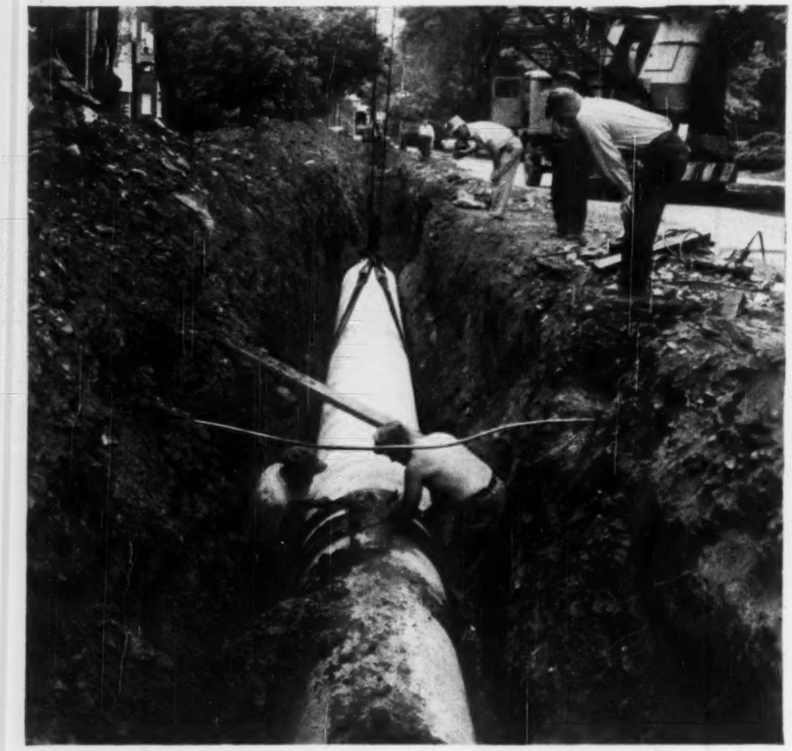
Double Glazing Adlake reversible, projected, double hung and fixed windows may be constructed with double glazing.

FOR COMPLETE DETAILS SEE THE ADLAKE 36-PAGE LISTING IN SWEET'S ARCHITECTURAL FILE, OR WRITE

THE
Adams & Westlake
COMPANY
1184 North Michigan, Elkhart, Indiana

Costs go down

as fast as the pipe!



Lancaster, Pennsylvania: Ten miles of 42-inch ID steel main are an important addition to the local water supply system. The 100 per cent Dresser-Coupled line was laid by Frank Kukurin & Sons and Alconn Utilities.

AND DRESSER-COUPLED steel pipe goes in fast! Steel pipe in lengths up to 50-feet needs fewer connections, and Dresser® Couplings make those connections fast . . . two man-minutes per bolt. Steel pipe is lighter . . . saves freight costs and provides easier handling at the job-site. When you use Dresser-Couplings to join steel pipe, you eliminate the need for expensive, specialized joining equipment. The only tool you need is a simple hand wrench. For *least initial cost* and *lowest maintenance* on your next water line, specify Dresser-Coupled steel pipe.

Two man-minutes per bolt for permanent, leak-proof joints!

Bradford, Pennsylvania
Chicago
Houston
Philadelphia
New York
S. San Francisco
Toronto & Calgary

DRESSER
MANUFACTURING DIVISION
ONE OF THE DRESSER INDUSTRIES ®

Men and Jobs

Doughty Is Chief Engineer Of Pacific Bridge Company

S. Clifford Doughty has been named chief engineer of Pacific Bridge Co., West Coast engineering contractors.

Mr. Doughty has been on the PB engineering staff for 5 years. He was previously with Guy F. Atkinson Co. on Pine Flat Dam and Folsom Powerhouse; with Merritt-Chapman & Scott Corp. on Folsom Dam and Chesapeake Bay Bridge; and with Spencer, White & Prentis on Chain-of-Rocks Lock.

PHS Names Harry Hanson Assistant Surgeon General

Harry G. Hanson, director of the Public Health Service's Taft Sanitary Engineering Center, Cincinnati, has been promoted to assistant surgeon general. He has been director of the Taft Center since its formation in 1954.

Mr. Hanson is a graduate of North Dakota State College and holds a master's degree from Harvard University. He has been a commissioned officer of PHS since 1942. He was state sanitary engineer in North Dakota for several years before entering the PHS; and was assistant chief of the Service's sanitary engineering division before assuming direction of the Taft Center.

Careers

Business

E. F. Liebrecht has been elected president of Kellogg International Corp., a subsidiary of M. W. Kellogg Co., New York City, an international engineering and construction firm. Mr. Liebrecht, who will continue as a vice

The Mathews barrel, containing all working parts of the hydrant, is readily removed for inspection or repair by simply unscrewing it from the elbow and withdrawing it through the protection case.

I want you to see for yourself how the Mathews replaceable barrel is a real community asset

I can show you easily and quickly with this scale model. See? When a Mathews is broken by a skidding automobile, you can slip in a new barrel in a matter of minutes, *and without excavating.* It's a real safety feature for the community—allows only momentary interruption of neighborhood fire protection.

And these additional quality features help keep the Mathews at the head of the line:

- Compression-type valve opens against water pressure—a positive leakproof construction
- Operating thread cannot be bent
- Head revolves 360° just by loosening bolts
- Nozzle sections are changeable
- Nozzle levels can be raised or lowered without excavating
- Bell, mechanical-joint or flange-type connections
- O-Ring seal furnished when specified

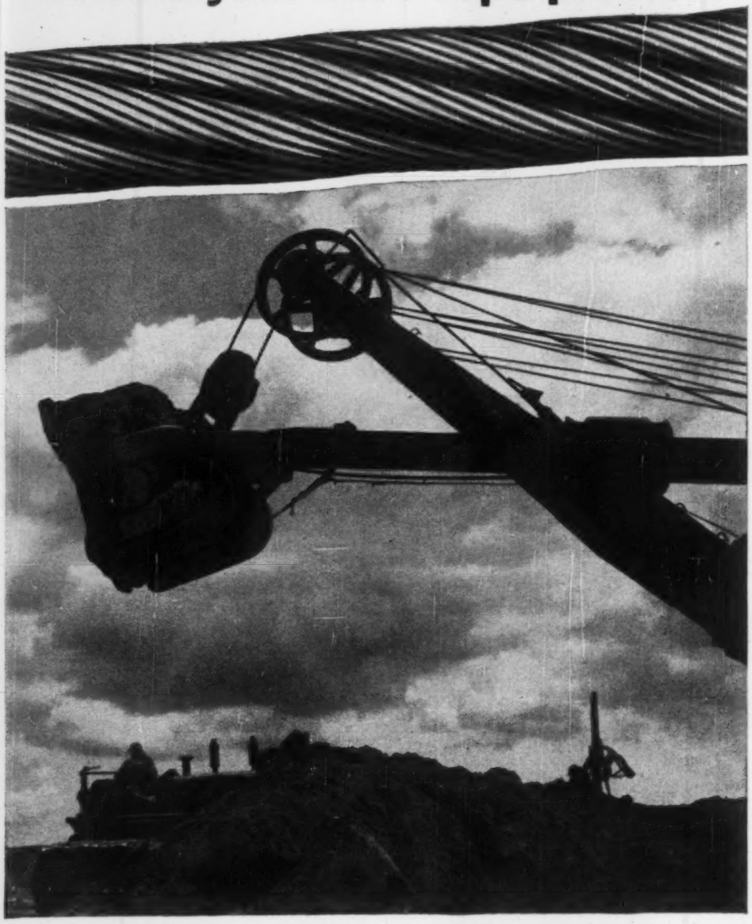
MATHEWS HYDRANTS—by **R. D. WOOD COMPANY**

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

bending fatigue...

is this your wire rope problem?



FREE Red-Strand Service Bulletin No. 105 brings you the answer you're after!

Do broken wires start showing up much too soon after you put a new wire rope into use? If so, costly bending fatigue is probably the explanation. Fortunately much of the expense it causes can be eliminated by following the simple procedures explained in Red-Strand Wire Rope Service Bulletin No. 105. This is one of a series devised to help wire rope users get better service without spending more money. Copies are sent on request. Write H. K. Porter Company, Inc.—Leschen Wire Rope Division, St. Louis 12, Mo.

LESCHEN
Red-Strand
WIRE ROPE

H. K. PORTER COMPANY, INC.
LESCHEN WIRE ROPE DIVISION

president of M. W. Kellogg Co., will establish his office at Kellogg House, London. He also was elected president of Societe Kellogg and will be responsible for directing this Kellogg subsidiary in France.

Daniel Koffler & Associates has opened an office for the practice of structural, mechanical and sanitary engineering in New Castle, Del.

Public Works

Horace E. Horton has been named project construction engineer in charge of completing work on the U. S. Bureau of Reclamation's $47 million Solano project in northern California.

L. P. Staman has resigned as Tacoma, Wash., director of public works and will return to private consulting practice. **Myron Calkins,** city engineer, has been named acting director.

Herbert B. Elder, resident engineer at The Dalles Dam on the Columbia River throughout all of its construction stages, has been named resident engineer for construction of the $350 million John Day Dam.

William O. Comella has been named Wyoming division engineer for the U. S. Bureau of Public Roads. He was formerly district engineer in Columbus, Ohio, for BPR.

Joseph M. Fox, formerly eastern area engineer for the Pennsylvania Railroad, is named bridge engineer for the Delaware State Highway Department, replacing **Joe S. Robinson,** who has been promoted to assistant chief engineer of the department.

Aldo J. Benedetti became superintendent of the Tacoma water division June 1, succeeding **J. A. Kuehl,** who retired after more than 30 years in the department.

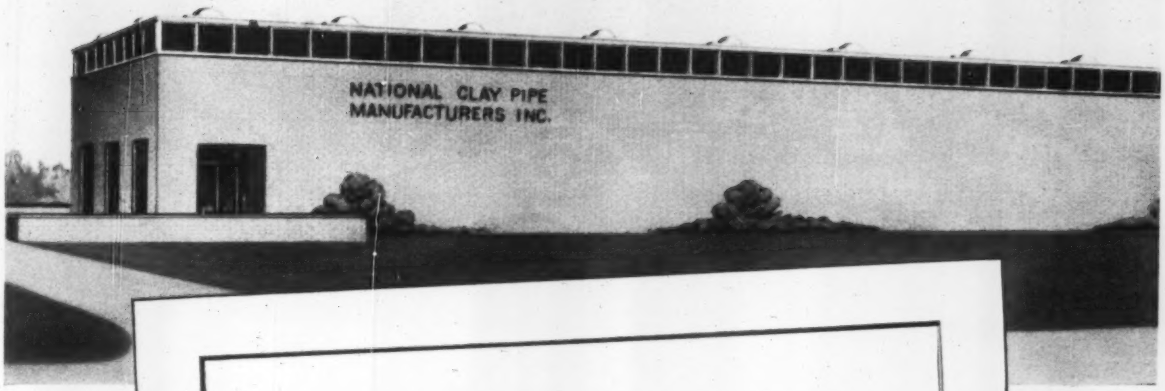
Education

William W. Hagerty, dean of the School of Engineering at the University of Delaware since 1955, has resigned. He will leave the university in September to become dean of engineering at the University of Texas in Austin. Upon Dean Hagerty's departure, **Lyle G. Clark,** chairman of the department of mechanical engineering, will become acting dean of engineering.

Associations

A. I. Savin, Hartford, Conn., was elected president of the New England Road Builders Association at its annual meeting.

Robert E. Kirch, field representative for Master Builders of Iowa, has been selected new manager of the Wisconsin Chapter of the Associated General Contractors of America, Inc. He succeeds the late **J. Harry Green,** Janesville, Wis.



CLAY PIPE RESEARCH

Takes Another Forward Step!

The industry that brought you the revolutionary, new, factory-made compression joints and longer, stronger Clay Pipe is proud to announce the dedication of its completely new research laboratory. This imposing structure, located at Crystal Lake, Illinois, is but another example how the member companies, comprising the National Clay Pipe Manufacturers, Inc., are, through cooperative research, working together to make Clay Pipe even a better product for you, in whose hands the health and sanitation of a nation rests.

Substitutes may have some of Clay Pipe's features. But now, more than ever before, you can be certain that *only* Clay Pipe has *all* the features you can trust . . . and, as its performance through centuries will attest, *it never wears out!*

C-550-35

Vitrified **CLAY PIPE** *Never Wears Out*

NATIONAL CLAY PIPE MANUFACTURERS, INC. 1820 N Street, N. W., Washington 6, D. C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio • 703 Ninth & Hill Bldg., Los Angeles 15, California • Box 172, Barrington, Illinois • 206 Mark Bldg., Atlanta 3, Georgia

Mack 6-wheel dumpers pace the pavers on road-surfacing job. Used for a variety of heavy on- and off-highway hauling chores, these trucks, as well as Armour's other Macks, have set new performance records with . . .

down time less than

"Our contracts require us to take on all kinds of jobs, ranging from rock hauling to road surfacing to transfer of iron ore from ship to shore—and we require versatile trucks that enable us to complete these jobs swiftly and dependably.

"They're all tough requirements, but our 16 Macks have the stamina to handle these jobs . . . and they do it economically, with minimum maintenance, and less than one per cent down time," says Mr. John M. Reid, Treasurer, of Armour Excavating, Inc., of Philadelphia.

Armour is especially pleased with Mack's 20-speed transmission because it's built to give the best performance under all driving conditions, from city street to tough off-highway low-speed hauling.

Macks have what you need for dependable, profitable operation in on- or off-highway construction—maneuverability and ease of handling for fast spot-

Another of Armour's Macks dumping asphalt paving material. The combination of Mack's Balanced Bogie with Power Divider and the 20-speed transmission makes these trucks unexcelled for the roughest off-highway hauling, yet gives them the flexibility needed for open road operation.

one percent

ting and dumping; the ability to haul maximum payloads with low operating costs; and only routine maintenance requirements—sensible reasons why you can't afford *not* to operate Macks!

Your nearest Mack branch or distributor will be glad to give you on-the-job performance figures and the names of Mack users near you. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

For letter-perfect concrete

These simple letters can be used to write volumes of praise for the men who use them in concrete construction. They can help compose an enduring testimonial for *your* work, too.

Reduce water with a few drops of WRDA and you instantly boost compressive strength as much as 25 per cent. By spreading the cement particles uniformly throughout the entire batch, WRDA gives you a more cohesive mix, yet one that places fast and clean. And with less water, there's less bleeding and segregation.

Add air and control it with DAREX AEA, and billions of bubbles lubricate the mix for smoother flow and finer finishing. Those same air bubbles effectively guard against frost damage and cracking, even in the toughest, coldest, wettest weather cycles.

These products cost so little, yet add so much, you owe it to yourself to try them both. You need both, WRDA and DAREX AEA, for letter-perfect concrete every time.

WRDA
DAREX AEA

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION

Cambridge 40, Mass. • San Leandro, Calif.
Chicago 38, Ill. • Montreal 32, Canada

Unit Prices

Vehicular Trench Tunnel, Louisiana

Under intercoastal waterway, construction must proceed without interrupting waterway traffic

This 960 ft vehicular tunnel in Houma, Terrebonne Parish, La., for the Louisiana State Highway Dept., will be built in an excavated trench. The $5,999,062 contract with Baltimore Contractors, Inc., Baltimore, Md., is 17.5% below the second and almost 22% below the high of three bids. It is 13.3% above the engineers' estimate. Fromherz Engineers, New Orleans, La., and Singstad & Baillie, New York City, are the consultants. R. B. Richardson is director of the State Highway Dept. at Baton Rouge, La., and C. C. Bernard is project control engineer.

Tunnel length is 959.83 ft, roadway approaches 862.2 ft; open ramps 723.79 and 733.45 ft, for a total of 3,279.3 lin ft, at an average cost of $1,829.40 per ft. Exterior of tunnel is 21 ft 10 in. high and 36 ft 2¾ in. wide. Interior is 14 ft 1½ in. high and 30 ft 3 in. wide, with two 11 ft 6 in. roadway lanes and a 4 ft walkway.

Tunnel construction is reinforced concrete, with waterproof membrane and steel jacket completely encasing the portion below water level. The contractor must dredge a channel bypass and conduct his operations in such a way as not to interrupt waterway traffic.

Wrought iron pipe is ASTM designation A72.

Wages in New Orleans include: carpenters, $2.90; structural iron workers, $3.275; power crane & shovel operators, $3.10; common laborers, $1.65.

1C	Baltimore Contr., Inc., Baltimore, Md.	$5,999,062
2	Brown & Root, Inc., Houston, Tex.	7,274,883
3	Boh Bros. Constr. Co., New Orleans, La.	7,666,040
EE	Fromherz Engineers, New Orleans, La. and Singstad & Baillie, NYC	5,295,239

Bids: 4-23-58 Items	Unit	Quantity	Unit Prices 1 C	 2
Dredging channel bypass	cy	31,500	$1.00	$2.10
Excavation, tunnel, trench	cy	135,000	12.20	16.00
Piles, untr timb, w/anchor	lf	230,000	2.50	1.80
without anchor	lf	56,000	1.80	1.50
tr timb, without anchor	lf	61,600	1.80	2.10
Test piles, timber, unloaded	ea	15	300.00	1,080
loading	ea	15	1,400	1,600
Conc, cl A	cy	38,000	30.00	38.00
cl D	cy	25	50.00	112.00
cl S	cy	10,000	25.00	28.00
Reinf steel, deformed	lb	4,200,000	0.14	0.13
wire mesh	lb	24,000	0.14	0.18
Pneumatic mortar	sf	129,000	0.45	0.80
Waterprfg, 4-ply membrane	sy	1,700	2.70	7.25
cement coat	ls	job	1,500	4,044
Steel, fabricated carbon	lb	3,125,000	0.15	0.24
Iron castings	lb	25,500	0.33	0.28
Steel castings	lb	11,000	0.35	0.37
Galv stl pipe rail, tp A	lf	1,650	8.60	10.50
tp B	lf	360	6.00	8.80
tp C	lf	250	8.30	8.50
Stair rail tp D	lf	150	68.00	24.50
Guard rail	lf	200	16.00	6.50
Ingot iron doors	ea	3	180.00	940.00
Steel expansion jts	lb	11,600	0.20	1.50
Name letters, tunnel	ls	job	7,000	9,300
Pipe rail, vitr enam ctd	lf	950	14.00	13.50
Copper drains	lb	900	3.00	4.25
Exhaust air ports	ea	10	130.00	165.00

Bids 4-23-58 Items	Unit	Quantity	Unit Prices 1 C	 2
Split vitr pipe gutt lining, 12" & over	lf	1,450	4.00	4.40
10" & under	lf	1,450	3.00	3.00
Tile, cer glzd, ceiling	sf	27,500	2.00	2.50
wall	sf	28,300	1.53	2.50
extra wall & ceiling	ls	job	550.00	4,600
Cmt mortar ceiling coves	lf	1,870	0.60	2.30
bases	lf	3,750	0.30	0.70
Doors & frames, niche, tp A	ea	10	275.00	475.00
tp B	ea	6	275.00	475.00
tp C	ea	8	275.00	580.00
tp D	ea	11	60.00	160.00
Roadway lane markers	lf	4,650	6.00	4.00
Ventilation bldg	ls	job	50,000	90,400
Piping, water supply	ls	job	36,000	33,000
plumbing & sanitary	ls	job	2,800	3,500
drainage	ls	job	45,000	47,000
Ventilation i	ls	job	50,000	34,000
Pumping i	ls	job	50,000	44,500
Electrical work i	ls	job	282,000	341,000
Plaques & signs	ls	job	1,250	4,000
Excavation, common	cy	15,364	0.60	1.00
drainage	cy	348	1.00	2.00
spec borrow	cy	6,300	4.50	2.60
Watering	Mgal	26	2.00	4.00
Seeding	lb	77	3.00	4.00
Fertilizer, comm, 8-8-8	lb	4,104	0.10	0.25
Base crse, shldrs, clam & reef shell	cy	620	4.75	6.00
soil cement	sy	9,268	1.10	1.50
Surf crse, ramps, clam shl	cy	182	3.50	6.00
Bituminous primer	gal	2,278	0.25	0.50
Asphalt cement	gal	7,987	0.25	1.00
Aggregate, coarse, size 1	cy	172	4.50	9.25
fine, size 2	cy	101	4.00	10.00
seal coat, size 3	cy	68	15.00	9.25
PCC Pavement, 8" uniform	sy	361	5.00	6.00
9" uniform	sy	11,777	5.40	6.00
Conc, cl A	cy	3	75.00	100.00
Reinf steel, deformed	lb	176	0.25	0.25
RCC pipe, 12"	lf	885	4.65	5.20
15"	lf	302	5.44	5.00
18"	lf	980	7.50	9.50
24"	lf	659	10.00	10.00
Fence, new comb mesh & BW	sta	4	5.50	330.00
Gate, single swinging walk	ea	4	15.00	132.00
dble swinging drwy	ea	2	60.00	330.00
Conc post rt of way marker	ea	20	10.00	64.00
Catch basin	ea	11	150.00	300.00
Manholes	ea	5	300.00	300.00
Drop inlets	ea	14	200.00	300.00
Conc curb, integral, 4" driveover, tp A	lf	3,640	0.75	1.50
tp B, 6" barrier	lf	875	0.80	1.20
tp C, 5" barrier	lf	768	0.75	1.50
Old walks remove	sy	258	0.80	2.00
curb remove	lf	608	1.25	0.75
PCC walks, 4"	sy	920	4.50	6.55
6"	sy	103	5.25	9.00
Signs & barricades	ls	job	3,000	4,600
Sand	cy	845	4.50	8.40
Utilities, remov & reloc	ls	job	82,500	143,200
Bldgs & misc strs, remov & dispose of	ls	job	10,350	12,700

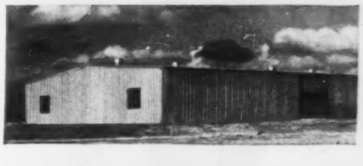
Complete 400 cal days. Liq dam: actual Hwy Dept. costs.

Delaware Highway Prices

Average Unit Price Bids on 1957 Contracts

	Unit	No. Jobs	Unit Prices Avg.	 Range
Excavation, common	cy	21	$0.67	$0.50– $1.60
Borrow	cy	15	0.95	0.50– 1.50
selected	cy	22	1.33	0.75– 2.80
Excavation for structures	cy	10	4.55	1.25– 10.00
Quarry screenings	t	2	3.89	3.00– 4.25
Bit surf treat, RC-1 RC-3	gal	19	0.165	0.125– 0.50
Stone and crushed chips	t	18	6.11	5.75– 10.00
Hot mix asph concrete	t	21	9.65	6.80– 15.00
Cement conc pavement	cy	9	24.22	19.30– 29.00
base course	cy	7	27.04	19.30– 29.00
pavement...patch	sy	16	10.55	7.00– 15.00
Concrete masonry	cy	14	77.76	45.00–125.00
Bar reinforcement	lb	10	0.15	0.12– 0.16
Wire mesh reinforcement	sy	8	5.77	5.00– 6.30
Structural steel	lb	2	0.19	0.19– 0.20
Macadam, waterbound	t	9	4.96	4.40– 7.25
Wood shoulder curb	lf	6	0.64	0.60– 0.75
Wire rope guard fence	lf	10	1.99	1.80– 2.20
End post attachments	ea	10	45.11	40.00– 50.00
RC pipe, 24"	lf	10	6.25	6.00– 7.70
24"	lf	5	8.53	6.25– 12.95

Now...
clear-span up to
120 FEET
economically



with low-rigid-frame
Butler
buildings

It's no longer necessary to pay a premium price for wide, clear-span construction. Low-Rigid-Frame (LRF) Butler buildings offer the advantages of pre-engineering in clear spans up to 120 feet.

Pre-engineered Butler LRF components save routine engineering, custom fabrication. On-site construction is little more than an assembly job.

Butler Low-Rigid-Frames go up quickly, support entire building load . . . permit fast, economical, exterior curtain-wall construction with Butler metal panels or any other building material you prefer.

Die-formed Butler roof panels attach quickly, give lifetime protection and require little maintenance. The 1-in-12 roof pitch gives these buildings a low, modern, almost flat-roof appearance.

For full details on this new way to build top quality, really wide, clear-span buildings economically, contact your Butler Builder. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.

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BUTLER MANUFACTURING COMPANY
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Equipment for Farming, Dry Cleaning,
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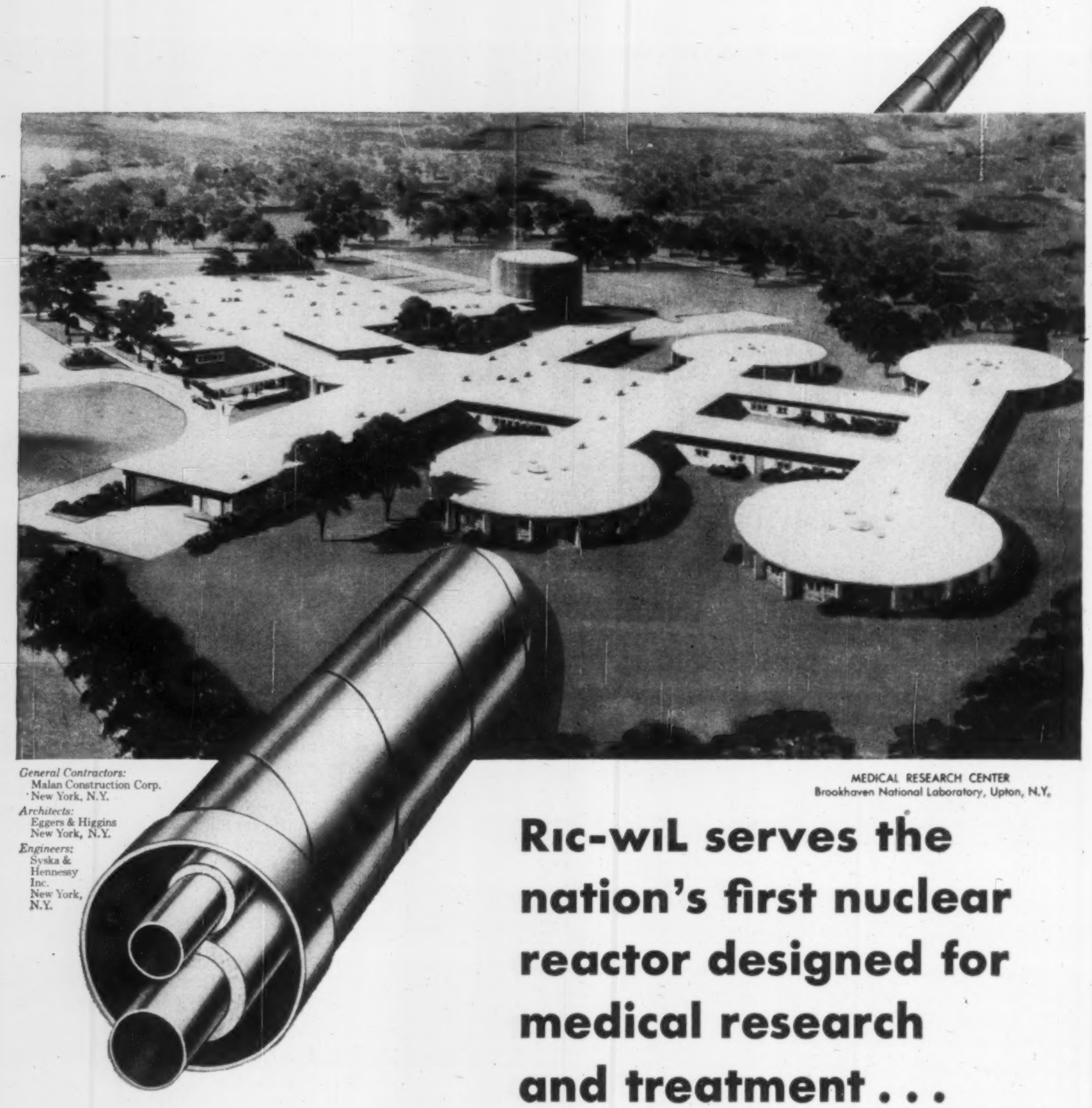

General Contractors:
Malan Construction Corp.
New York, N.Y.
Architects:
Eggers & Higgins
New York, N.Y.
Engineers:
Syska &
Hennessy
Inc.
New York,
N.Y.

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Brookhaven National Laboratory, Upton, N.Y.

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Malan Construction Corp. of New York City as prime contractor, is building for the Atomic Energy Commission the Nation's first medical research center containing a nuclear reactor designed specifically for medical research and therapy. The entire medical center, including the reactor, is scheduled for completion in 1958 at a cost of approximately $6,000,000.

Ric-wiL prefabricated piping was specified and installed to handle the underground steam distribution. Ric-wiL, Incorporated is proud to be a part of the nation's peace time program in Atomic development.

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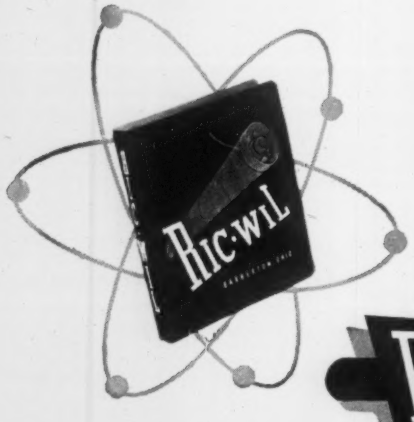

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. . . of Exceptionally High Thermal Efficiency

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PREFABRICATED **INSULATED PIPING SYSTEMS**

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

Materials and Labor Prices Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Jun. 12; Next, July. 17
- Wood Products, Glass, Explosives, Chemicals: Last, Jun. 19; Next, Jul. 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jun. 26; Next, Jul. 31
- Wage Rates, Building Board, Lath, Insulation: Last, Jul. 3; Next, Jul. 31

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.• truckload del.• per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.35am	$3.95am	$3.60m	$3.10	$3.10	$2.50‡	$2.18	$2.33	$1.65	$1.75	$0.175	$ .21	$14.50g
Baltimore	3.90a	3.80a	3.32a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.10/13.60
Birmingham	4.23	3.30f	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	5.80ei	4.59a	4.67e	3.00am	3.00am	3.00am	1.75am	1.85am	....	....	.23	.275a	15.00h
Chicago	4.13ag	3.87a	3.90/3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	13.50
Cincinnati	4.70c	4.18c	4.20c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	....	3.90c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a	....	.22	16.15
Dallas	3.75a	3.25a	3.63	2.65	2.70	1.90	2.43	2.63	....	....	....	.27	12.00
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20‡b	....	....	....	....	.22	.245a	10.70
Detroit	4.25a	3.75ag	3.72ag	4.50‡b	4.50‡b	4.25	3.75‡	3.75‡	3.50‡	3.50‡	.24	.27a	14.40
Kansas City	4.23a	3.83a	4.10a	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	13.50
Los Angeles	5.12ch	4.68ch	5.60	2.56‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	....	....	.17fm	.285m	12.96lh
Minneapolis	4.44a	4.04a	4.10a	2.70‡ag	2.70‡ag	1.60‡ag	3.75‡g	3.75‡ag	....	....	.19	....	14.30f
Montreal	3.36d	3.11d	3.72	1.90‡a	2.15‡a	2.25‡a	1.90‡i	2.15‡i	2.00	2.00	.20	.28a	10.80ak
New Orleans	4.06a	3.65a	3.85	2.45	2.45	2.09	....	....	1.45	1.65	.275	....	14.00
New York	4.83a	4.42a	3.72	3.20bk	3.20bk	2.30bk	3.100bl	3.10bl	....	....	.235n	.270b	17.40an
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	2.35	.25/.32	....	14/15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.60aq	2.60aq	3.00aq	2.00e	2.00e	2.20	2.20	.26	.28	15.80
St. Louis	4.16/4.48c	3.76/4.08c	3.86/4.18	3.25am	[illegible].10am	2.40/3.10am	1.65j	1.75j	....	....	.24	.30c	12.65/13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00e
Seattle	4.22a	3.70a	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.26	.37c	13.90i
Toronto	4.00a	3.84a	4.00a	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.26	.275c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: •a Less 10¢ disc, 15 days. •b Less 2% disc, 15 days. •c Less 10¢ disc, 10 days. •d Truckload lots, deliv. 10¢ disc, 20 days. •e Truckload lots •f Fob mill, add 14.58 to $21.31 per car switching charges •g fob mill + freight •h LCL. •i Less 2% disc, 10 days •j Truck lots, fob yard •k 100 bag lots •l over 150 sacks •m Incl. 4¢ Ga. frt. increase

SAND GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons or more. •e ½". •f Pea gravel. •g Less 5% for cash. •h Less than 5 tons. •i Plus 5% mun. & prov. tax •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q fob yard

CONCRETE BLOCK: •a Cinder •b Waylite. •c Haydite. •d Celocrete •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18.

READY MIXED CONCRETE: •a 5 cu. yds. or over del. Man. •b 25 cu. yds or more. •c 10–100 cy. brackets. •d 1–3 mi. zone. •e 2,000 lb comp. •f 2,500 lb. comps •g Less 25¢ disc, 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 5% mun. & prov. •l 1:2½:3½. •m F.o.b. yard. •n Plus escalator clause. •o Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.56†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Lesley, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y.	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of 1958.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	....	....	....	$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	150.00‡	....	....	23.00i	....	.095i	0.185i	.10iwE	.19iwE	.10i	.105i	0.195i
Birmingham	....	66.00i	....	....	....	....	....	....	....	....	....	....
Boston	....	....	....	22.00ap	46.00ap	.22a	.46a	.105aFw	.24aFw	.105ao	.174aGo	.235aGo
Chicago	150.00‡	90.00‡b	3.95/4.00‡j	21.20b	31.20b	20.40bv	30.40bv	.975bwH	.1775bwH	.080b	....	....
Cincinnati	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland	....	89.50d	6.30g	25.00A	....	25.00Av	....	.1115AwF	....	....	.1180AG	.21AG
Dallas	e	40/78	e	26.35	45.39	.1116	.1944	29.85	51.40	.1080	1116	1944
Denver	....	58.00	....	....	....	....	....	....	....	....	....	....
Detroit	....	116.00	....	33.05	....	32.45v	....	13.50I	....	.1133	....	.28
Kansas City	e	e	e	16.80d	....	16.80v	....	.0825cwJ	....	.06c	0.125c	....
Los Angeles	e	....	e	22.50dmz	....	22.50dvz	....	24.00dz K	....	23.00dv	.1038j	.2038j
Minneapolis	....	....	3.73h	26.00	....	29.50v	....	0.115w	....	0.105	.125	....
Montreal	e	e	e	32.50n	44.80n	.176n	.226n	18.70nuE	23.70nuE	.154n	.242ns	.27ns
New Orleans	....	....	....	20.00e	....o	20.00ev	....e	.095ew	....o	.085B	.095BL	.1905B
New York	....	....	3.50f	20.99m	42.94m	20.99vt	40.94vt	9.61uF	19.01uF	....	9.68u	19.11u
Philadelphia	175/185	110/120	4.06	24.00	....	24.00	....	.11uF	....	.105	....	....
Pittsburgh	60.00k	99.12ln	6.35	32.40i	....	32.40iv	....	.1411i	....	.14‡	.1411i	....
St. Louis	....	....	....	19.74f	....	.1825	....	.0893fwM	....	0.165	.825	....
San Francisco	....	70.00c	....	24.50g	41.50g	24.50gkv	41.50gkv	24.50g N	43.00g N	25.25vg	25.50yv	.2063s
Seattle	....	....	....	27.00z	42.00h	27.50z	....	28.50 K	....	26.25hv	25.50hv	47.10hrv
Toronto	....	135.00	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: •b 3 x 3¾ x 8. •c 2¼ x 8¼ x 4. •d LCL, truck deliveries. •e Not used. •f 2" interior 6# treat. •g 3". •h 2" tr, 8#. •i 3 x 3 x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale; •m Pine; oak $6.57. •n Truck del.

ASPHALTS: •a Price at plant, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segunda. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50–110 penetr. •l Less than 100 penetr. •m 40/300 penetr. •n Fed. tax included; add 5% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150/300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS, SS. •H RC 0–5 incl. •I MC 4. •J MC, RC $0.095 •K MC 3,4,& 5. •L MS. •M MC 1–5, RC 1–5, $0.106. •N MC 3. •O Truckload. •P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. •Q F.o.b. Eldorado, Ark.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **N. H., Portsmouth**—BA About 7/22—U. S. Eng., 562 Congress St., Portland, Me., constr. roads, FY 56, Pease Air Force Base, ENG-19-016-59-1. $100,000-$200,000. Plans deposit $10. CD 9/17.

▲† **Vt., Winooski**—SAC MISSILE FACILITY—BA About 8/7—U. S. Eng., 310 State St., Springfield, Mass., constr. SAC missile facility (FY-58) Ethan Allen Air Force Base. $3,000,000-$4,000,000. Plans deposit $50. CD 9/19.

HEAVY CONSTRUCTION—LB & CA

VERMONT—State Hy. Dpt., State Office Bldg., Montpelier, bids opened 6/20,

Vt.—**Lambert Constr. Co., Inc.**, Box 488, White River Jn., Vt. LB **$575,438** grading, 2 span composite WF beam bridge U.S. Rte. 4; the Rutland-Sherburne Rd. beginning approx. 0.830 mi. NE of the Rutland-Mendon Town line and extend. easterly 1.531 mi. DF 020-2 (4) Mendon;

Vt.—**S. V. Rossi Constr. Co., Inc.**, 49 McDermott Ave., Torrington, Conn. LB **$187,055** grading, etc. U.S. Rte. No. 7 the Rutland-Bennington Rd. beginning approx. 2.192 mi. north of the Dorset-Manchester Town Line and extend. northerly 1.127 mi. DF-019-2 (8) Dorset. CD 6/12.

BUILDINGS—LB & CA

▲† **Kirkland Constr. Co.**, 209 Bent St., Cambridge, Mass., LB **$1,480,790**, MISSILE MASTER FACILITY at Fort Heath. ENG-19-016-58-190, WINTHROP, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids June 26. CD 6/9.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., New York**—SCHOOL—BA 7/29—Bd. Educ., 45-12 Crescent St., Long Island City, general constr., plumbing and drainage, heating, ventilating, electrical work and lighting fixtures Public School 132, East 168th St. between Washington and Park Aves., Bronx Boro. $2,300,000. Plans deposit $25, general, $10 each for trades. CD 9/23.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened June 26,

N. Y.—**Dyer-Fitts Constr. Co., Inc.**, Box 738, Binghamton, N. Y. LB **$103,918**, est. $109,000. (2 bidders) resurf. 0.86 mi. section Court St. Arterial (Rte. 17 and 11) in Binghamton, starting at city's east line and extending westward, Broome Co.

N. Y.—**Perini Corporation**, 13 Mt. Watte Ave., Framingham, Mass. LB **$5,653,280**, est. $8,009,000 (1 bidder) constr. 4.7 mi. four-lane divided section of Northway near Plattsburgh and 9.69 mi. access roads at Rugar St. on southwest of outskirts of city and extending northeastward around city to point north of city near present intersection of Cumberland Head Rd. and Moffitt Rd. just west Rte. 9, Clinton Co.

N. Y.—**H. L. Baughman, Inc.**, 1240 Jefferson Rd., Rochester 23, N. Y. LB **$534,786**, est. $636,000. (6 bidders) reconstr. 4.53 mi. section Rte. 26 starting at Broome-Cortland County line and extending northward to Willet, Cortland Co.

N. Y.—**County Asphalt, Inc.**, 129 Main St., Tarrytown, N. Y. LB **$584,140**, est. $705,000. (3 bidders), resurf. 7.81 mi. section Rte. 8 starting at Rte. 10 intersection and extending northward to Deposit-Masonville town line, Delaware Co.

N. Y.—**Peckham Road Corp.**, 50 Haarlem Ave., White Plains, N. Y. LB **$233,413**, est. $268,000. (3 bidders), resurf. 2.75 mi. section Rte. 9 starting in Hyde Park and extending northward, Dutchess Co.

N. Y.—**Robert C. Kramer**, Main St., Holland, N. Y. LB **$433,863**, est. $518,000. (8 bidders), reconstr. 3.46 mi. section Center St. (Rte. 16) starting about 600 ft. east of Pennsylvania RR overpass near Harlem Rd. and extending to point about 550 ft. east of Bullis Rd. in East Seneca, Erie Co.

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened June 26,

N. Y.—**Sheridan Const. Corp.**, 3580 Sheridan Dr., Buffalo 26, N. Y. LB **$1,081,209**, est. $1,272,000. (2 bidders) reconstr. three Rte. 93 bridges: one in Akron and two north of Akron, totaling 4.31 mi. incl. reconstr. 1.58 mi. of route within Akron village limits, starting at Rte 5 intersection and extending northward; bridges to be conconstr. north of village include one over Murder Creek and one over Tonawanda Creek (county line) Erie and Niagara Counties;

N. Y.—**Wm. E. Bouley Co., Inc.**, 265 Genesee St., Auburn, N. Y. LB **$468,320**, est. $541,000. (5 bidders) reconstr. bridge and approaches carrying Rte. 5 and 20 over Honeoye Creek (county line) east of Lima; two double-lane side-by-side; two span 140 ft. long structures over creek; approaches totaling 0.47 mi. will consist of four lane divided asphalt concrete pavements, Livingston and Ontario Counties;

N. Y.—**C. D. Perry & Sons, Inc.**, Box 866, Troy, N. Y. LB **$489,245**, est. $607,000. (7 bidders) 3 span 390 ft. long bridge and approaches to carry Rte. 46 and 49 over Erie Barge Canal near New London west of Rome, distance 1.29 mi. will incl. widening existing 18 ft. wide approaches to minimum 22 ft. and resurf. with asphalt concrete, Oneida Co.

N. Y.—**C. D. Perry & Sons, Inc.**, Box 866, Troy, N. Y. LB **$224,901**, est. $252,000. (6 bidders) two span 103 ft. bridge and approaches to carry Rte. 412 over Oriskany Creek near Clinton southwest of Utica 0.17 mi. to incl. widening existing 16 ft. concrete hy., Oneida Co.

N. Y.—**Rhodes Const. Co., Inc.**, 833 Front Ave., Salamanca, N. Y. LB **$98,461**, est. $112,000. (5 bidders) new single span 24 ft. bridge to carry Rte. over Stony Brook about ⅓ mi. east of Orangeville, west of Warsaw, totaling 0.42 mi. to incl. 22 ft. wide bit. macadam approaches for distance 1,600 ft. each end of bridge, Wyoming Co.

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened June 26,

N. Y.—**C. D. Murray Co. Inc.**, 310 Eckel Theatre Bldg., Syracuse 2, N. Y. LB **$498,223**, est. $504,000. (2 bidders) b. conc. 2.07 mi. Rte. 41—FARC 58-19 Proj. DF-525 (3). Cortland Co.

N.Y.—**G. Douglas Longway**, Theresa Rd., R.F.D. #4, Watertown, N. Y. LB **$249,436**, est. $289,000., (2 bidders) reconstr. 1.07 mi. section Rte. 11 and 37 starting at north city line of Watertown and extending northward; new channelized "Y" intersections will be constructed to connect LeRay St. and Mill St. on south end of project and Rtes. 37 and 11 on north end, Jefferson Co.;

N.Y.—**Kranz Const. Co., Inc.**, 36 State St., Albany, N.Y. LB **$417,381**, est. $460,000. (2 bidders) reconstr. 4.39 mi. section Rte. 20N, starting on Washington St. just inside Manlius village line and extending southeastward thru Oran to Onondaga-Madison county line, Onondago Co.

N.Y.—**West Shore Concrete Co., Inc.**, Suffern, N.Y., LB **$779,315**, est. $830,000. (2 bidders) reconstr. 2.99 mi. section Rte. 32 starting in Gate and extending northward to Newburgh city line., Orange Co.

N. Y.—**Peckham Road Corp.**, 50 Harlem Ave., White Plains, N. Y. LB **$648,834**, est. $899,000. (8 bidders) reconstr. 4.15 mi. section Rte. 165 starting at Rte. 10 intersection east of Seward and extending westward to point about 300 ft. inside Otsego county line, joining there with east end of recently completed construction., Schoharie and Otsego Counties.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

N.Y.—**Potter-DeWitt Corp.**, Pavilion, N.Y. LB **$2,765,520**, est. $3,159,000. (7 bidders) reconstr. 9.7 mi. section Rte. 13 starting at Tompkins-Schuyler county line and extending northeastward partially on new improved location to point just south of Newfield-Ithaca town line, Tompkins Co.

N.Y.—**Amsterdam Excav., Co., Inc.**, 22 Market St., Amsterdam, N. Y. LB **$601,285**, est. $710,000. (3 bidders) widening and resurf. 7.33 mi. section Rte. 209 starting in Kerhonkson and extending northeastward to point near Kripplebush., Ulster Co.

N.Y.—**Mount Vernon Contg. Corp.**, 439 N. Terrace Ave., Mount Vernon, N. Y. LB **$10,609,287**, est. $13,647,000 (9 bidders) constr. 3.73 mi. six-lane divided Elmsford section of the Cross Westchester Expressway extending from State Thruway's Elmsford interchange eastward to western terminus of Expressway's White Plains Section already under contract, incl. also constr. 5.85 mi. local service roads and access ramps, traffic interchange facilities between Expressway and Thruway incl. 13 bridges., Westchester Co.

N.Y.—**County Asphalt, Inc.**, 129 Main St., Tarrytown, N. Y. LB **$128,000**, est. $133,000. (4 bidders) resurf. 2.25 mi. section Rte. 9 in Tarrytown and North Tarrytown immediately north and south of State Thruway., Westchester Co.

Robertson Electric Inc., 126 So. Elmwood Ave., Buffalo, N. Y., LB **$64,340** (7 bidders), furnishing and delivery of 13 generator grounding cubicles for the Lewiston Power Plant, 12 motor generator ground cubicles for Tuscarora Power Plant in Lewiston, Niagara Co. Spec. No. PA-N-25013 Niagara Contr. No. NP 12, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids June 26. CD 5/22.

Pa. Dpt. Forest & Waters, 412 Education Bldg., Harrisburg, Pa. rejected bids June 10 clearing, grubbing 85 acres, reservoir area, clearing 282 acres Gifford Pincot State Park, York Co., PENNSYLVANIA. LB $74,415. CD 6/16, under LB.

SOUTH

HEAVY CONSTRUCTION—LB & CA

† **VIRGINA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike,

Contee Sand & Gravel Co., Laurel, Md. CA **$996,123**. Proj. 1A15, paving, Spout Run to Leesburg Rd., George Washington Memorial Parkway. Bids June 13, awarded June 20. CD 6/20, under LB.

† **Valley Constr. Co.**, Columbus, Miss. CA **$202,408**. CHAPEL in Triangle Area at Kessler Air Force Base, BILOXI, MISS. U. S. Eng., P.O. Box 1169, Mobile, Ala. Bids June 18. CD 6/9.

▲ **LOUISIANA**—State Hy. Dpt., Hy. Office Bldg., Baton Rouge, bids opened 6/25,

La.—**James & Co.**, Box 531, Ruston, La. LB **$1,690,131**. grading, drainage structures overpass and interchange structures, c. conc. pavement and related work 0.652 mi. Sibley Rd. Interchange, Rte. I-20, SP No. 740-00-20. FAP No. I-20-1 (10) (I-540 (10), Webster Parish. CD 4/30, under LB.

La.—**W. R. Aldrich & Co.**, 2493 Baywood Ave., Baton Rouge, La. LB **$2,689,679**. grading, drainage structures, c. conc. pavement and related work 4.435 mi. Sulphur-Westlake Hy., Rte. I-10 SP No. 740-001 18-FAP No. I-10-1 (7) 20 (I-520 (7), Calcasieu Parish. CD 6/11.

† **T. L. James Co., Inc.**, Box 8, Kenner, La., LB (Item 1) **$168,000**; (Item 2) **$115,000**; (Item 3) **$105,000**, automotive parking, access drives, drainage structures, etc., Naval Air Station. Alvin Callender Field, NBy-17710/58, NEW ORLEANS, LA. Dist. P. Wks., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. Bids June 18. CD 6/4.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort, bids opened 6/20,

Ky.—**Lovell & Hart Constr. Co., Corey Constr. Co.,** and **H. C. Adams**, P.O. Box 1528, Lexington, Ky. LB **$841,255**. (2 bidders), b. conc. Class I surf. 1.59 mi. Lexington Circle Rd. from Georgetown Rd. extending westerly to Leestown Pike (US 421), U-UG 538 (&) SP 34-304, Fayette Co.

Ky.—**Ford Constr. Co.**, Bardwell, Ky. LB **$142,087**. (2 bidders), grading, bank grav. surf. 5.225 mi. Kevil-Monkeys Eyebrow-Oscar Rd. DS 224 (4) SP 4-201, Ballard Co.

Ky.—**L. M. Hooper**, P.O. Box 288, Caneyville, Ky. LB **$108,700**. (2 bidders), b. conc. base 0.426 mi. Franklin-Prices Mill-Adairville Rd., bridge and approaches at Red River in Prices Mill, DS 247 (1), SP 107-205, Simpson Co.

Ky.—**Bullock Constr. Co.**, Pittsburg, Ky. LB **$150,169**. (3 bidders), grading, traffic bound surf. 4.21 mi. Hazard-Ky. 80 Rd. extending northeasterly down Curly Fork Creek to Ky. 80. SP 97-122, Perry Co. CD 6/4.

Ky.—**R. C. Durr**, Rte. 1, Walton, Ky., LB **$102,224**,

(Continued on page 94)

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362	1½	Yes	Yes	— —	Yes
93-M	2½	Yes	Yes	— —	Yes
101-M	3	— —	Yes	— —	— —
111-M	4	— —	Yes	— —	— —

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(Continued from page 92)

corporate limit of Prestonsburg. DS 193 (8) SP 36-196, Floyd Co., cancelled bids to have been opened June 20, RH Group 4 (1958), Clark Co. CD 6/4.

BUILDINGS—LB & CA

▲† **Albert Gersten & Assocs.**, P.O. Box 178, Beaufort, S. C. CA **$8,881,000.** constr. 618 family HOUSING UNITS (Capehart), ENG 49-080-58-8 (7), FORT BELVOIR, VA. U. S. Eng., 1st and Douglas Sts. N.W., Wash., D. C. Bids May 1. CD 5/6, under LB.

T. L. Kiker, 402 W. Hawthorne St., Dalton, Ga. CA **$628,653.** SANCTUARY-CHAPEL AND EDUCATIONAL WING, DALTON, GA. First Baptist Church, Dalton, Ga. Bids May 6. CD 5/15, under LB.

▲ **Daniel Constr. Co.**, Box 1511, Birmingham, Ala. LB **$2,955,000.** Northwoods low rent HOUSING, Ala. 47-6 (incl. 23 dwelling bldgs.) HUNTSVILLE, ALA. Huntsville Housing Auth., Box 379, Huntsville, Ala. Bids June 17. CD 6/2.

Central Contracting Corp., 2300 Algoma Blvd., Oshkosh, Wis. CA **$375,000.** Contr. 208, STEAM GENERATING PLANT addn., incl. turbine, boiler and coal pulverizer, etc., FORD, KY. East Kentucky Rural Electric Co-operative Corp., Lexington Rd., Winchester, Ky. Bids June 20. CD 6/19.

Al J. Schneider Co., 3720 7th St. Rd., Louisville, Ky. CA **$522,520.** general contract, Southwick ELEMENTARY SCHOOL, LOUISVILLE, KY. Louisville Bd. Educ., 5th and Hill St., Louisville, Ky. Bids June 10. CD 6/13, under LB.

Struck Constr. Co., 147 N. Clay St., Louisville, Ky. CA **$850,100.** general contract, brick, rein.-con. James P. Boyce Memorial LIBRARY, LOUISVILLE, KY. Southern Baptist Theological Seminary, 2825 Lexington Rd., Louisville, Ky. Bids June 4. CD 5/20.

† **Trammel Constr. Co., Inc.**, Bristol, Tenn. CA **$193,846.** U. S. RESERVE TRAINING CENTER, incl. 2 bay maintenance shop and a main bldg. containing offices, classrooms, assembley space, target range, etc., GREENVILLE, TENN. U. S. Eng., 306 Federal Office Bldg., Nashville 2, Tenn. Bids June 4, awarded June 20. CD 5/6.

MIDDLE WEST

BUILDINGS—BA

▲ **Ill., Chicago**—SCHOOL—BA 7/14—Bd. Educ., 228 N. LaSalle St., Chicago, 2 story, brick Thomas Chalmers School addn., S. California Ave. between Roosevelt and 12th Place, $1,000,000, Pace Assocs., 53 W. Jackson Blvd., archts.; 2 story and bsmnt. Alice M. Birney Elementary School addn., $400,000, 120 N. Wood St., Cone & Dornbusch, 100 N. LaSalle St., archts. CD 8/1/57 for Thomas Chalmers School. CD 7/23/57 for Alice M. Birney School.

HEAVY CONSTRUCTION—LB & CA

▲ **Mead Electric Co.**, 5401 W. Harrison St., Chicago, Ill., CA **$5,894,706,** street lighting sys., Spec. No. 80.63-58-1, CHICAGO ILL. City, City Hall, Chicago, Ill. CD 11/13/56.

Santucci Constr. Co., 5025 Church St., Skokie, Ill., CA **$854,180,** Upper Des Plaines intercepting sewer, Contr. 11-D, Ext. C, Palatine-Rolling Meadows, CHICAGO, ILL. Metropolitan Sanitary Dist. of Greater Chicago, 100 E. Erie St., Chicago, Ill. CD 6/5, under LB.

BUILDINGS—LB & CA

Leo J. Brielmaier Co., 1028 Straight, Cincinnati, O., CA **$618,655,** RECEPTION and TREATMENT CENTER, Longview State Hospital, CINCINNATI, O. Dpt. P. Wks., State Dpt. Bldgs., Columbus, O. CD 5/1, under LB.

▲ **John C. Long, Inc.**, 600 W. Jackson Blvd., Chicago, Ill., LB **$1,340,000,** 2 story, steel, brick and conc. machinists' mates and boilermen's school, NAVAL TRAINING CENTER, GREAT LAKES, ILL. Ninth Naval Dist., Great Lakes, Ill. CD 5/21/58.

C. G. Schmidt, Inc., 4199 N. Richards St., Milwaukee, Wis., LB **$912,850,** est. $1,000,000-$1,500,000, (4 bidders) DINING HALL and KITCHEN Bldg. No. 424, Veterans Admin. Hospital, TOMAH, WIS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 24. CD 5/14.

▲ **Consolidated Constr. Co.**, 800 Marquette St., Bay City, Mich., CA **$1,274,000,** SEMINARY, Wienicke and Weiss Rds., SAGINAW, MICH. St. Paul Minor Seminary, Saginaw Diocese, Saginaw, Mich. Joseph E. Godeyne, 417 Bay City Bldg., Bay City, Mich., archt.; **Miller-Davis Plg. & Heating Co.**, 1029 Portage, Kalamazoo, Mich., CA **$345,000,** mechanical work (SAGINAW, MICH.).

▲ **Spence Brothers**, 417 McCoskry, Saginaw, Mich., CA **$1,282,000,** West Side JUNIOR HIGH SCHOOL, YPSILANTI, MICH. Bd. Educ., 302 West Forest Ave., Ypsilanti, Mich. Bids May 29. CD 5/21.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Neb., Omaha**—DISTRIBUTION CENTER—BA About 7/15—Safeway Stores, Inc., 111 S. 46th St., distr. center at 72nd and F Sts. $6,000,000. Leo A. Daly Co., 633 Insurance Bldg., Omaha, archt.

Tex., Fort Worth—SCHOOL—BA 7/22—Fort Worth P. Schools, 3210 W. Lancaster, 1 story Waverly Park Elem. School, Weatherford Hy. $370,000. Plans deposit $25. Extended date. Earl E. Koeppe, 1011 Cont. Life Bldg., Fort Worth, archt. CD 6/17.

Iowa, Cedar Rapids—HOSPITAL—BA 7/23—St. Luke's Methodist Hospital, mechanical work 6 story and bsmnt. hospital addn. $500,000. CD 3/26.

† **Mo., Springfield**—MAINTENANCE SHOPS—BA On Or About 8/1—Bureau of Prisons, Dpt. Justice, 101 Indiana Ave. N.W., Zone 25, 90x180 ft. maintenance shops, U. S. Medical Center Federal Prison Bldg.; addn. to maintenance shops. $827,000. Eugene Johnson & Assocs., 400 E. McDaniel, Springfield, Mo., archt. CD 3/12.

HEAVY CONSTRUCTION—LB & CA

Barbarossa & Sons, Inc., 402 33rd Ave. North, St. Cloud, Minn., LB **$496,900** (4 bidders), two pumping stations and waste treatment plant, LITTLE FALLS, MINN. City, Little Falls, Minn. Bids June 24. CD 6/6.

† **Sioux Falls Constr. Co.**, 800 S. 7th St., Sioux Falls, S. D. LB **$467,000** (3 bidders) rocket storage facilities and group O&T Bldg. Sioux Falls Municipal Airport, ENG-25-066-58-157, SIOUX FALLS, S. D. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 20. CD 6/6.

† **Green Constr.**, Manhattan, Kan., LB **$462,411** (Schedule 1) hangar apron and utilities, ENG-23-028-58-74, FORT RILEY, KAN. U. S. Eng., 1900 Federal Office Bldg., Kansas City 6, Mo. Bids June 19. CD 5/16.

▲† **Irvinbilt Constr. Co.**, 304 Clay St., Box 785, Chillicothe, Mo., LB **$1,396,000** (3 bidders) Nike Hercules Missile Areas, Site 1, near Lawson, Mo.; LB **$1,355,000** (3 bidders) near Lone Jack; LB **$1,357,000**, near Gardner, Kan. ENG-23-028-58-77, MISSOURI-KANSAS. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut, Kansas City, Zone 6, Mo. Bids June 25. CD 6/2, under Missouri;

Patti Constr. Co., 1340 Admiral, Kansas City, Mo., LB **$1,512,000** (1 bidder) site 4, near Ft. Leavenworth, Kan.;

Martin K. Eby, 610 North Main, Wichita, Kan., LC **$4,864,000**, Est. $5,659,696 (3 bidders), all four Nike-Hercules Missile Sites (Missouri-Kansas).

† **T. F. Powers Constr. Co.**, 217 4 Ave. No., Fargo, N. D., LB **$486,824**, est. $470,859 (5 bidders), Group O & T Bldg., A.N.G. Hector Field, ENG-25-066-58-156, FARGO, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb.

† **Greer-Maurer**, Box 776, Grand Island, Neb., LB **$856,461** (5 bidders), readiness crew and alert hangar, Grand Forks Air Force Base, ENG-25-066-58-135, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson 2, Neb. Bids June 24. CD 5/28.

† **Lowe Constr. Co.**, Box 1956, Billings, Mont., LB **$424,064**, Est. $418,210 (3 bidders), readiness crew bldg. Minot Air Force Base, ENG-25-066-58-136, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 24. CD 5/29.

NEBRASKA—State Dpt. Rds. & Irrigation, Lincoln, rejected bids June 19, maintenance gravel surf. Stapleton North Patrol No. 71049, Logan Co. received no bids grading, detour, etc. 0.6 mi. Falls City-Rulo. Proj. F-447 (4), Richardson Co. CD 6/6.

COLORADO—State Hy. Dpt., 4201 E. Arkansas, Denver, Colo.—**Gardner Constr. Co.**, Glenwood Springs, Colo., CA **$246,903** Est. $292,000, plant mixed asphaltic surf. 2.747 mi. Idaho Springs. Colo. Proj. No. F 005-3(14), Clear Creek Co.;

Colo.—**Pioneer Constr. Co.**, Rte. 2, Box 21, Pueblo, Colo., CA **$254,975** Est. $246,000, blading, structures, stabilization, plant mixed asphaltic surf. 9.987 mi. Beshoar Jct. and Kim. Proj. No. S 0002 (19), Las Animas Co. Bids June 20 CD 6/18.

Western Paving Constr. Co., 5105 Washington St., Denver, Colo., CA **$740,697** Est. $830,000, (Part 1)-East-West RUNWAY, drainage, lighting and taxiways, incl. reconstr. 8,510 ft. east-west runway and 1,300 ft. of north south runway; 20,000 storm sewer, PUEBLO, COLO. City, City Hall, Pueblo, Colo. Bids June 19 CD 6/9.

† **Commercial Contracting Co.**, 1039 W. Malone St., San Antonio, Tex., CA **$86,920**, unmanned gap filler facility, Schedules A and B, Zuni Air Force Station and Santa Rosa Air Force Station, Contr. No. DA-29-005-ENG-2126, IFB ENG-29-005-58-33, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids May 16, CD 5/9.

BUILDINGS—LB & CA

▲† **J. J. Fritch**, 6834 Harry Hines Blvd., P.O. Box 35126, Dallas 35, Tex. CA **$6,489,000.** 400 Capehart HOUSING UNITS, Offutt Air Force Base FORT CROOK, NEB. Procurement Officer, Offut Air Force Base, Omaha, Neb. Bids June 17 CD 6/27 under LB.

▲† **Martin K. Eby**, 610 N. Main St., Wichita, Kan., LB **$1,819,350** Est. $971,670, 1 story administration and Storage Bldg., 1 story Consolidated Mess; two 3-story enlisted men's Barracks, ENG-23-028-58-79, FORT RILEY, KAN. U.S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids June 25 CD 5/28.

▲† **Maggi Constr. Co.** and **McCoy Plumbing and Heating Co.**, 20 Green Ave., Rolla, Mo. LB (Basic One) **$4,407,348** Est. $4,110,200; LB (Basic Two), **$3,779,785** Est. $4,110,200, (4 bidders) BATTALION FACILITIES. ENG-23-028-58-75. FORT LEONARD WOOD, MO. U.S. Eng., 1800 Federal Office Bldg., Kansas City, Zone 6, Mo. Bids June 25 CD 6/17.

L. J. Largen Constr. Co., Box 6215, Kansas City, Mo., CA **$541,712** Est. $500,000, 2 story, bsmnt., 194 x 220 ft. HEALTH and PHYSICAL EDUCATION BLDG., MARYVILLE, MO. Northwest Missouri State College, Bd. Regents, Maryville, Mo. Bids Apr. 2 CD 4/10 under LB.

▲ **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis 3, Mo., CA Est. **$1,000,000**, 1 story, 60,000 sq. ft. brick, concrete, steel, etc. PLANT for mfg. fusion cast refractories, 101 Ferry St., ST. LOUIS, MO. Walsh Refractories Corp., 101 Ferry St., St. Louis 7, Mo. CD 6/25.

(Continued on page 98)

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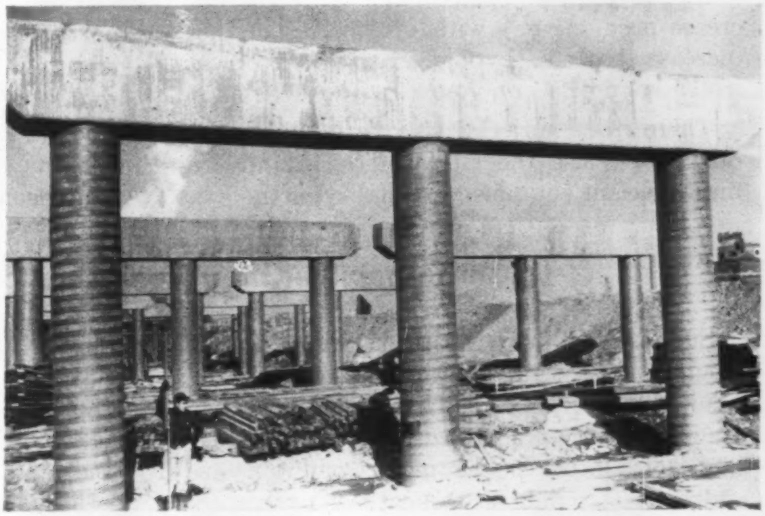

J. F. Fitzgerald Expressway, Boston, Mass.
M. DeMatteo Construction Company, general contractors

For the smoothest continuous concrete column surfaces, use

SONOCO
Seamless Sonotube®
FIBRE FORMS

With the Seamless Sonotube Fibre Forms, columns form better, strip quicker and finish easier! Developed by Sonoco for use where smoother column surfaces are desired, this premium form saves you time, money and labor!

Whenever there's a round concrete column to be finished . . . there's a Sonoco Sonotube Fibre Form to do it . . . faster, and more economically than any other way!

Low-cost SONOTUBE Fibre Forms handle easily and require minimum bracing . . . can be ordered in specified lengths or sawed to size on the job.

Choose the Sonoco fibre form that best fits your requirements . . . the Seamless Sonotube, the patented "A" Coated Sonotube (standard form for finished columns) or the "W" Coated Sonotube (for columns where finishing is not required).

Order in sizes from 2" to 48" I.D. in standard lengths of 18 ft. Other lengths can be furnished to meet special requirements.

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Before you bid that next job . . .

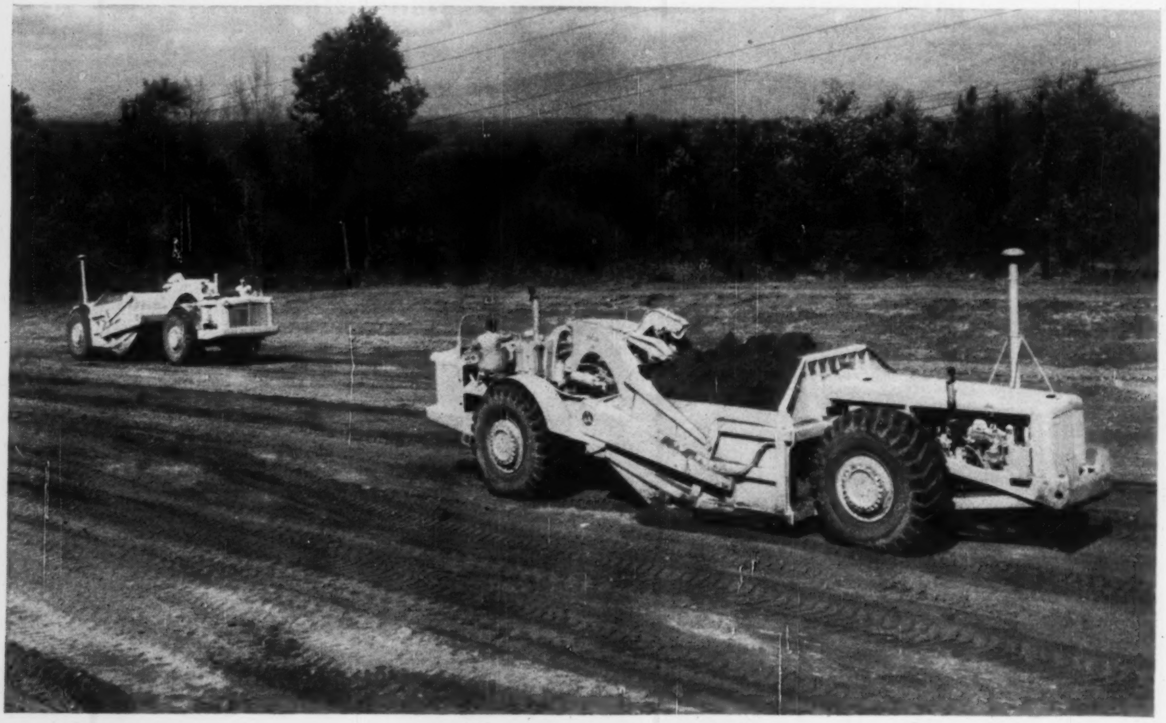
compare the earning power of "Twins"

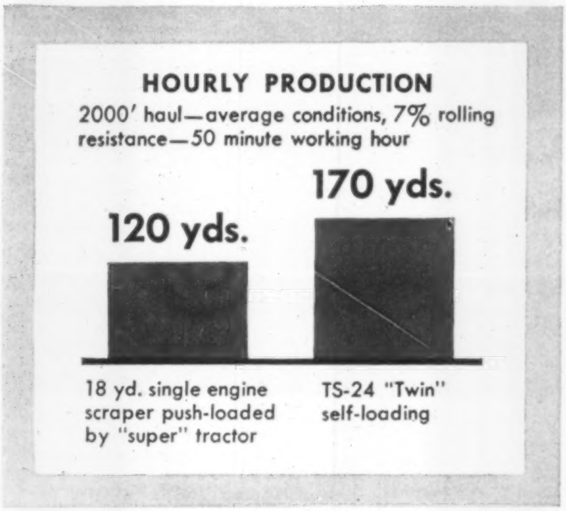
Unless your equipment can help you increase production — without a corresponding increase in costs — you may have a problem instead of a profit on your next job.

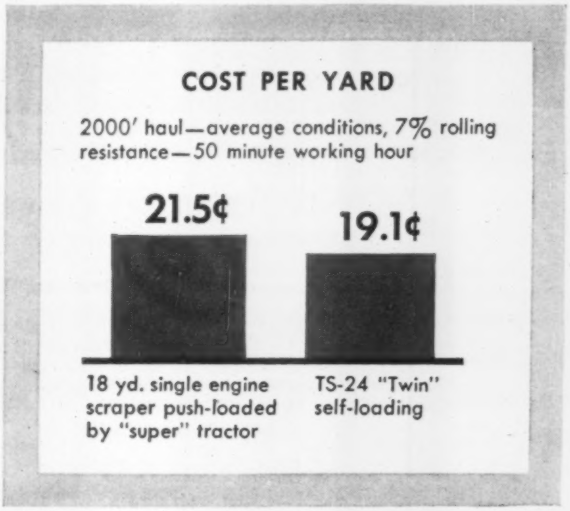
There's one sure-fire way to increase productivity — use the latest methods and the most efficient equipment available for the job, even if it means replacement or addition to your fleet. To stay competitive and still get your share of work — at a price that brings a profit — you simply can't afford to pass up the higher return on investment with new techniques and machines. Here's a typical comparison . . .

On an investment of $255,000 . . . 38% gross return

Suppose you have a spread of three 18 yd. single engine scrapers working on a 2,000′ haul. They're push loaded by a 300 h.p. "super" tractor and you're also using a motorgrader and 200 h.p. dozer and roller. Conditions are average (7% rolling resistance) so your scrapers produce about 360 yds. per hour. Total investment for the entire spread would be about $255,000 — an hourly cost of $77.30. That figures out to 21.5c a yd. Assuming a work season of 2,000 hours, you'd have a total production of 720,000 yds. At an average bid price of 35c a yd., gross revenue would amount to $252,000 and your dirt moving cost would total $154,800. The return is 38% on the equipment investment.

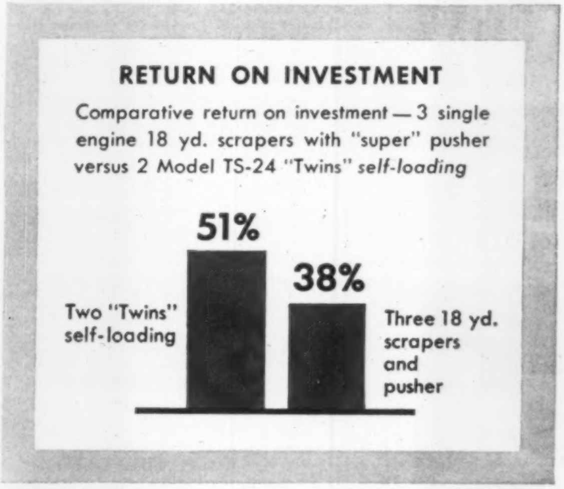






16% *lower* investment . . . 33% *higher* return

Now, let's say you put two Euclid TS-24 "Twin" Scrapers on the same job and use the same grader and dozer. With the "Twins" self-loading in the average condition, a reasonable estimate of production would be a total of 340 yds. an hour. Total investment, with dozer, roller and grader, would be $214,000. Hourly cost of the complete spread would be $65.00, with a cost per yard of 19.1c. Season production of 680,000 yds. would produce gross income of $238,000 at 35c a yard. Your dirt cost of $129,880 would result in a 51% return on the equipment investment.



The figures in the above comparison may not jibe with your cost figures but they're down-to-earth estimates of the built-in productivity of the "Twin". Based on your own experience, use production and cost figures that you're sure of and you'll find that Euclid "Twins" will give a tremendous bidding and profit advantage on any size and kind of job.

And don't overlook the bonus performance of the TS-24 that doesn't show in specs or calculations. For example, it's self-loading and independent of other equipment for pioneering work and small yardage jobs . . . it has all wheel drive that enables it to work earlier and later in the season, under conditions that keep other scrapers sidelined. And when you're really pressed for time and yardage, you can add a pusher tractor to get almost unbelievable hourly production.

With "Twins" in your fleet you can bid more work, more profitably and realize the highest return on investment. For facts and figures proof, and a demonstration on your job, see or call your Euclid dealer.

Engineered to fit the job . . .
Euclids are your best investment

GM
GENERAL MOTORS
EUCLID

EUCLID DIVISION
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weil SUBMERSIBLE SUMP PUMP
The only submersible approved by
The Underwriters Laboratories, Inc.

UL

Built for Automatic Submerged Operation

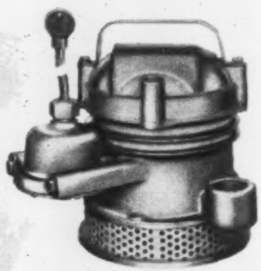
A PACKAGED UNIT . . . priced lower than many conventional sump pumps.

OPERATES UNDER WATER

Hermetically sealed motor **with overload protection** and automatic reset, and positive leak-proof rotating shaft seal assures dependable performance at all times. If current fails moisture cannot damage motor.

ECONOMICAL TO INSTALL

Can be installed thru a 15″ opening. Is easily placed in a metal tile or concrete sump 2′ to 8′ deep. Installation can be sealed and made GAS-TITE.



MICRO-SWITCH CONTROL

Fool-proof and trouble-free. Pump and switch engineered for one million starts ...without attention.

MOTOR: 1/3 HP, 1750 RPM, 110 volt **CAPACITOR TYPE** with 10 ft. waterproof cable and plug
IMPELLER: Open, Non-corrosive
SCREEN: Brass
BASE: Heavy Duty Steel
DISCHARGE: 1¼″
SHAFT: Stainless steel
DIMENSIONS: Height: 11″; Diameter: 11¾″; Weight: 50 lbs.

FOR DRAINING
Drainage Sumps
Valve Pits
Pump Pits
Machinery Pits

PERFORMANCE

Discharge Head (Ft.)	5	10	15	20	22	24
Capacity, GPH	3600	3350	2400	1830	1160	540

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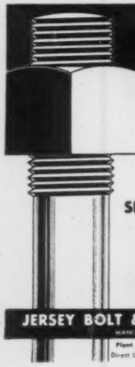

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ABILITY

SACHSE ELECTRIC INC.
BATON ROUGE LA

(Continued from page 95)

▲ **The Baldwin Co.**, 322 Gaines St., Little Rock, Ark., CA **$1,070,000.**, Est., $1,070,000., 2 story surgical and X-RAY ADDITION to existing Arkansas Baptist Hosp., LITTLE ROCK, ARK., Arkansas Baptist Hospital, 1700 W. 13th St., Little Rock, Ark., Awarded June 20, CD 8/26/57.

▲† **Stringfellow Amarillo Assocs.**, 2570 S. Harvard St., Tulsa, Okla. CA **$7,638,663.** constr. 500 units CAPEHART HOUSING, Amarillo Air Force Base, AMARILLO, TEX. Procurement Officer, Amarillo Air Force Base, Amarillo, Tex. Bids June 16 CD 5/22.

▲ **Thos. S. Byrne Inc.**, Fort Worth National Bldg., Fort Worth, Tex. CA **$1,300,000.** 5 story HOSPITAL addn. FORT WORTH, TEX. All Saints Episcopal Hospital, 1525 W. Magnolia St., Fort Worth, Tex. A. George King & Assocs. 819 Penn St., Fort Worth, Tex. archts. Awarded June 10.

Platt Rogers Constr. Co., P.O. Box 761, Colorado Springs, Colo., LB **$377,000** Est. $500,000, 3 story 56 x 115 ft., NURSING HOME, COLORADO SPRINGS, COLO. Cragmor Foundation, Inc., c/o Edward L. Bunts and F. Lamar Kelsey, archts., 21 E. Monument, Colorado Springs, Colo. Bids June 17 CD 6/3.

▲† **H. B. Zachry Co.**, P.O. Box 10188, San Antonio, Tex. CA **$3,414,779**, RANGE INSTRUMENTATION FACILITIES, White Sands Proving Grounds, ENG-29-005-58-132, LAS CRUCES, N.M., U.S. Eng., Box 1538, Albuquerque, N.M., Bids June 12, CD 6/25 under LB.

FAR WEST

BUILDINGS—BA

Calif., Sacramento—CAFETERIA, etc.—BA 7/22—State Div. Architecture, 1120 N. St., cafeteria addn., Sacramento State College. W.O. 4005GC-15. $611,000. Plans deposit $50. CD 7/24/57.

Calif., San Jose—FACULTY OFFICE BLDG.—BA 7/22—State Div. Architecture, P. Wks. Office, 1120 N St., Sacramento, 2 story, faculty office bldg. at San Jose State College. $350,000. Plans deposit $25. Harold C. Guilkey & Assocs., 1181 Bacon Way, Walnut Creek, archts. CD 3/14.

▲ **Calif., Santa Barbara**—SCHOOL—BA 7/23—Santa Barbara Bd. Educ., Santa Barbara, San Marcos High School. $4,000,000. CD 8/1.

▲ **Calif., Los Angeles**—NEUROPSYCHIATRIC INSTITUTE—BA 7/29—Regents University of Calif. Admin. Bldg., 405 Hilgarde St., neuropsychiatric institute UCLA Medical Center. $6,000,000. CD 11/13/56.

▲ **Calif., Costa Mesa**—WARD BUILDINGS, etc.—BA 7/30—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, two 1 story, about 61,000 sq. ft. ward bldgs., covered passages linking bldgs., transformer station and site development at Fairview State Hospital. W.O. 4007-GC-34. $1,142,000. Plans deposit $50. CD 1/10.

▲ **Wash., Seattle**—SCHOOL—BA 8/5—Seattle School Bd., 815 4 Ave. N., 1 and 3 story, 57,444 sq. ft. rein.-conc. Franklin High School addns. $1,250,000. Plans deposit $50. John W. Maloney, Central Bldg., Seattle, archt. CD 6/27.

HEAVY CONSTRUCTION—LB & CA

UTAH—State Rd. Comn., State Capitol, Salt Lake City, Bids opened 6/17,

General Contracting Corp., 3260 S. 3 E., Salt Lake City, Utah. LB **$252,260.** 3 concrete overpasses 40 ft. 30.17 ft. and 130 ft. F.A. Proj. No. 1-15-1 (2) 27 2nd Contr. (I-01-1) Washington Co. CD 4/21; LB **$80,127,** 1 concrete structure 131.81 ft. over Duchesne River State Rd. 35. Proj. FASP No. DS-0256 (1), Duchesne Co.

† **Rasmussen Constr.**, Orem, Utah. LB **$184,163**, item 1; LB **$249,450**, item 3; visitors center Bryce Canyon National Park, UTAH. National Park Service, Western Office, 1000 Geary St., San Francisco, Calif. Bids June 12. CD 5/27.

† **Purvis Constr. Co.**, S. 720 Washington St., Spokane, Wash., LB **$883,190**, est. $658,729 (1 bidder), modificating facilities, 4 GUIDED-MISSILE INSTALLATIONS in Fairchild defense area near here, ENG-45-108-58-168, SPOKANE, WASH. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 23. CD 6/18.

† **Power City Electric, Inc.**, 920 Howard St., Spokane, Wash., LB **$196,949**, est. $200,000-$300,000, underground electric distribution sys., Veterans Admin. Hospital, WALLA WALLA, WASH. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 24. CD 5/21.

† **Beckley & Thomas**, Roseburg, Ore., LB **$241,772**, Est. $272,700 (3 bidders) surf. 18.085 mi. and stockpile on Smith River and Paradise Creek Rds., Douglas Co., OREGON. Bureau P. Rds., Morgan Bldg., Portland, Oregon. Bids June 18. CD 6/6.

† **R. L. Greene**, 5103 N.E. 42 Ave., Portland, Ore., CA **$92,981**, est. $107,336 (5 bidders), receiver building and transmitter building at Mount Hebo Air Force Station. Inv. 58-148, MOUNT HEBO, ORE. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 13. CD 5/6/58.

† **Union Constr. Co. Inc., and R. A. Bianchi Constr. Co.**, Ventura, Calif. CA **$348,488.** Ventura River Proj. clearing Casitas Reservoir site, Spec. 200G-369, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids June 16. CD 9/16.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Charles MacClosky Co., 15900 S. Broadway, Gardena, Calif. CA **$1,062,522** constr. 1.3 mi. 4 lane freeway and 4 structures U.S. 101 through Arroyo Grande, San Luis Obispo Co. Bids June 11, awarded June 24. CD 6/16, under LB.

▲ **Ruane Corp.**, 8415 E. Las Tunas, San Gabriel, Calif. LB **$1,721,077** (5 bidders) transit shed railroad underground utilities, cathodic protection sys. East side of Pier B. Spec. 543, LONG BEACH, CALIF. Long Beach Harbor Dpt., 1333 Embarcadero, Long Beach, Calif. Bids June 26. CD 5/29.

▲ **Hight Constr. Co.**, 4344 Eagle Rock Blvd., Los Angeles, Calif. LB **$1,010,615** (5 bidders) activity and service bldgs. at Bloomfield Park, Artesia, Sorenson Park, East Whittier, Live Oak Park, Temple City, Rivera Park, Rivera; Valleydale Park, Azusa, Mountain View Park, El Monte, LOS ANGELES, CALIF. Los Angeles Co. Bd. Suprvs., 501 Hall of Records, Los Angeles, Calif. Bids June 25. CD 4/28.

C. Norman Peterson Inc., 2832 9th St., Berkeley, Calif. CA **$966,034.** sewage treatment plant in Coloma Sewer Assessment Dist. SACRAMENTO, CALIF. Sacramento County, 827 7th St., Sacramento, Calif. Bids May 21, awarded June 23. CD 5/29 under LB.

† **Harbison & Mahony**, 220 Sandburg Dr., Sacramento, Calif. LB **$340,971**, est. $319,494 (4 bidders) constr. nike guided missile field maintenance shop. Spec. No. 2450 ENG-04-167-58-56 TRAVIS AIR FORCE BASE, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 20. CD 5/29.

BUILDINGS—LB & CA

Chytraus Bros., 2040 Redondo Ave., Salt Lake City, Utah. LB **$548,680**, David Gourley ELEMENTARY SCHOOL, KEARNS, UTAH. Granite School Dist., 3212 S. State St., Salt Lake City, Utah. Bids June 17. CD 5/26.

▲ **George Whitmeyer & Sons**, 2759 Grant Ave., Ogden, Utah. LB **$1,565,000.** INFIRMARY and chronic disease hospital, ROY, UTAH. Weber Co. Bd. Commrs., City-County Bldg., Ogden, Utah. Bids June 24. CD 6/6.

Bowers Bldg. & Constr. Co., 2260 S. 3 East, Salt Lake City, Utah. CA **$891,978** East Mill Creek JUNIOR HIGH SCHOOL, SALT LAKE CITY, UTAH. Granite School Dist., 3212 S. State St., Salt Lake City, Utah. Bids Apr. 15. CD 4/25, under LB.

▲† **Hoffman Constr. Co.**, 715 Southwest Columbia, Portland, Ore., LB **$1,897,874**, est. $1,760,000, (5 bidders), PLUTONIUM RECYCLE TEST REACTOR and fabrication pilot plant, RICHLAND, WASH., Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash. 25, D. C. Bids June 24. CD 5/19.

▲† **U. S. Eng.**, 4735 E. Marginal Way, Seattle 4, Wash., rejected bids May 14, 64 units Capehart HOUSING, Fairchild Air Force Base, Inv. 58-95, SPOKANE, WASH. LB **$1,334,625.** CD 5/19, under LB.

▲† **George A. Fuller Co.** and **Murray Sanders**, 3100 West 8 St., Los Angeles 5, Calif., CA **$8,903,623**, 600 units Capehart HOUSING, McChord Air Force Base, Inv. 58-72, TACOMA, WASH., Procurement Office, McChord Air Force Base, Wash. Bids June 10. CD 6/13, under LB.

▲ **Harris Constr. Co., Inc.**, P.O. Box 109, Fresno, Calif. LB **$2,615,000.** (8 bidders) general constr. six 3 story 233,000 sq. ft. rein.-brick, masonry, concrete STUDENT RESIDENCE HALLS, site development work, California State Polytechnic College. W. O. 4005GC-28 and 25, SAN LUIS OBISPO, CALIF. State Div Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids June 25. CD 6/17.

† **Ralph Larsen & Son**, 64 South Park, San Francisco, Calif. LB **$373,313** (3 bidders) 2 rein.-con. EXPLOSION TEST BLDGS., 2 rein.-con. TESTING BLDGS., Site 300, STOCKTON, CALIF. U. S. Atomic Energy Comn., SF Operations Office, 518-17th St., Oakland, Calif. Rogers Engrg. Co., Inc., 16 Beale St., San Francisco, Calif., engr.

▲† **Diversified Builders Inc.**, 6855 Rosecrans Blvd., Paramount, Calif. LB **$1,935,000.** (4 bidders) addnl. TRAINING FACILITIES at Marine Corps Base, Spec. 11751-57, TWENTY-NINE PALMS, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids June 23. CD 5/29.

CANADA

BUILDINGS—BA

Que., **Montreal**—ENGINEERING TEST BUILDING—BA 7/8—Canadair Ltd., Laurentian Blvd., St. Laurent, Montreal, 1 and part 2 story, 20,000 sq. ft. structural steel frame engineering test building at Plant No. 4, $250,000. T. Pringle & Son, Ltd., 4795 St. Catherine St., W. Montreal, engrs. CD 6/6/58.

N. S., **Greenwood** — ARMAMENTS BUILDINGS — BA 7/24—Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont., 9 standard armaments buildings air force refueling base, Baffin Island, N.W.T., Royal tion, $350,000.

HEAVY CONSTRUCTION—LB & CA

Foundation Co. of Canada Ltd., 1900 Sherbrooke St. W., Montreal, Que., LB **$548,650** (24 bidders) piers and abutments Section 3, Nuns Island Bridge, MONTREAL, QUE. National Harbors Bldg., West Block, Parliament Bldgs., Ottawa, Ont. Dr. P. L. Pratley, 1117 St. Catherine St. W., Montreal, engr. CD 6/28/56.

▲ **Poole Construction Co., Ltd.**, Eighth Ave. and Hamilton St., Regina, Sask., CA **$1,448,000.** sewage pumping station, underground pipe lines, fencing, etc. sewage treatment plant site REGINA, SASK. City, City Hall, Regina, Sask. Underwood, McLellan & Associates Ltd., 1721 8th St. E., Saskatoon, Sask., engr. Bids June 19. CD 6/19/58.

Wappel Concrete & Construction Co. Ltd., 302 Canada Permanent Bldg., Regina, Sask., CA **$337,835.** conc. walk, combined walk and curb in city, REGINA, SASK.

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sound again!

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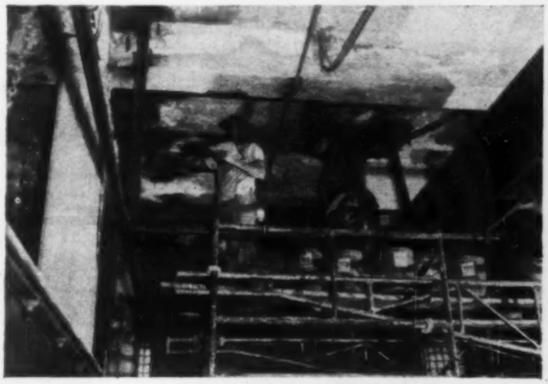
Workmen prepare old surface for patching with THORITE.

Water has entered the concrete and caused corrosion of reinforcing rods, blistering the concrete off surface and causing structural weakness throughout building.



Reinforcing was cleaned, all corrosion was removed and brush coat of THORITE applied over entire patching area, then filled in with trowel coats of THORITE, even with surrounding surfaces.

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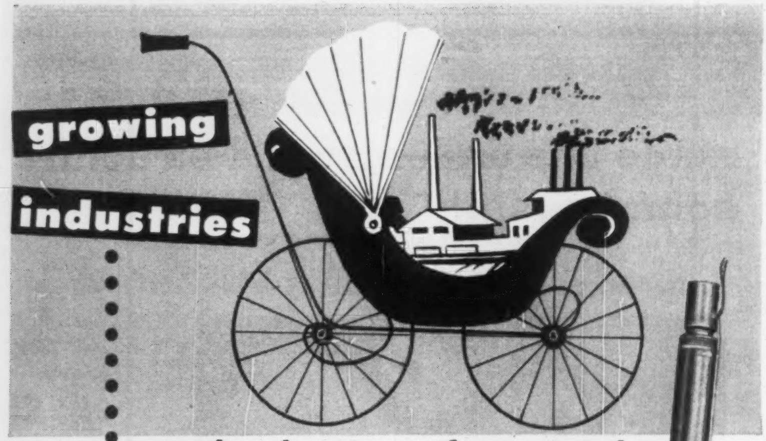

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Subsidiary—Barium Steel Corporation

City, City Hall, Regina, Sask. Awarded June 17. Grand total $636,604;

Beattie Ramsay Constr. Co., Ltd., Victoria & McDonald Sts., Regina, Sask. CA **$189,710.** pavement constr. Class A in city (Regina, Sask.);

Bird Constr. Co. Ltd., 7 and Smith Sts., **Regina,** Sask., CA **$109,059,** replacing c. conc. walk, curb, gutter and pavement extens. in city (Regina, Sask.).

BUILDINGS—LB & CA

Eastern Woodworkers Ltd., Brother St., New Glasgow, N. S., CA Est. **$400,000,** 50 units ROW HOUSING, GANDER, NEWFOUNDLAND. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Bids June 3. Awarded June 20. CD 5/19.

▲ **Humphreys & Glasgow (Canada) Ltd.,** Leslie St., Sheppard Ave., Don Mills P. O., Toronto, Ont., CA Est. **$1,000,000,** CHEMICAL PLANT, produce crude thorium concentrates, refined metallurgical grade thorium sulphate and thorium oxide, ELLIOT LAKE, ONT. Rio-Tinto-Dow, c/o Rio-Tinto Mining Co. of Canada Ltd., 335 Bay St., Toronto, Ont. CD 4/4.

G. H. Montminy, Inc., 5 Richelieu St., **Quebec City, Que.** CA Est. **$400,000,** 7 story, 58x138 ft., armoured conc. floors, brick walls, OFFICE BUILDING ANNEX, QUEBEC CITY, QUE. Les Immeubles Montmony, 30-40 St. John St., Quebec City, Que. **Awarded June 18.**

Bird Constr. Co., Ltd., 24 Dominion Bank Bldg., Moose Jaw, Sask. LB **$416,717,** ARMORIES BUILDING, Canadian Army, SASKATOON, SASK. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 10/18/50.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **B-E-C-K Constructors,** 3647 Stone Way St., Seattle, Wash., CA **$258,000,** est. $230,250 (1 bidder) 2 story, 8,710 sq. ft. rein.-con. battalion HEADQUARTERS and service building at Eielson Air Force Base, Inv. 58-39, ALASKA. U. S. Eng., P.O. Box 1288, Anchorage. Bids June 10. CD 5/16/58.

BUILDINGS—LB & CA

▲† **Raber & Kief, Inc.,** 5939 4 Ave. S., Seattle, Wash., LB **$1,019,750,** est. $1,193,663 (2 bidders) BARRACKS, ADAK, ALASKA. P. Wks. Officer, 17th Naval Dist., P. Wks. Office, 13th Naval Dist., Naval Station, Seattle, Wash. Bids June 24. CD 6/4.

AMERICANS ABROAD

BUILDINGS—BA

Iraq., Baghdad—HOSPITAL—BA 10/1—Development Bd. and Ministry of Development, Baghdad, Phase 1, Royal Medical City incl. 950-bed hospital and service bldg. Plans deposit $196. Litchfield, Whiting, Panero, Severud & Assoc., 292 Madison Ave., New York 17, N. Y., U.S.A., engrs.

HEAVY CONSTRUCTION—LB & CA

† **Huarte y Compania,** Madrid, Spain, LB **$287,651** (8 bidders) ROT-82, shop, torpedo and ammunition and utility bldg., Spanish Air Force Program, ROTA, SPAIN. Bureau Yards & Docks, Dpt. Navy, Arlington, Va., U.S.A.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

▲† **Hawaiian Dredging & Constr. Co., Ltd.,** J. H. Pomeroy & Co., Inc. & Koster, P.O. Box 3468, Honolulu, T. H., LB **$1,027,000,** special weapons training aircraft maintenance shop, aircraft washrack, airmen's dormitory, officers' quarters, utilities, NBy 3386, MARINAS ISLANDS, GUAM. Area P. Wks. Officer, Marianas, P. O. Box 35, Agana, Guam. Bids June 18. CD 6/17.

FOREIGN

HEAVY CONSTRUCTION—BA

Iraq—BA 8/16—Development Bd. and Ministry of Development of Govt. of Iraq., Baghdad, access and internal roads, water and electrical installations, drainage and sewerage sys., Western Baghdad Development Proj., Sectors 5, 6, 7, 9, 11 and 13. Plans deposit $70.

BUILDINGS—BA

Iran—FACTORY—BA 7/30—Tobacco Monopoly of Iran, Teheran, paper and carton mfg. factory.

Iraq—BA 8/2—VILLAGES—BA 8/2—Development Bd. and Ministry of Development of Govt. of Iraq, Baghdad, Villages No. 7 and 12, Greater Mussayib Proj., incl. houses, shops, schools, interior roads, water supply sys., water purification plant, elevated tank, etc. Plans deposit $42.

Iraq, Mosul—HOUSING—BA 8/16—Development Bd. and Ministry of Development of Govt. of Iraq, Baghdad, Housing Scheme incl. 332 houses and other incidental work. Plans deposit $28.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Ark., Camden**—City Council, Sanitation Committee, City Hall, sanitary sewerage sys. extens. and imprvs., incl. sewerage treatment plant and sewer lines. **$1,000,000.** Marion L. Crist & Assocs., 4324 W. Markham St., Little Rock, consult. engrs. CD 3/13/53.

▲ **O., Elyria**—City, City Hall, bond election Nov. 4, sanitary sewer trunk line extensions and improvements. **$1,750,000.** CD 11/28/56.

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▲ **O., Struthers**—City, City Hall, Struthers, bond election Nov. 4, sewage plant, sewers and pumping station. **$1,200,000.** Floyd G. Browne & Assoc., 125 W. Church St., Marion, consult. engrs. CD 4/4/57.

▲ **O., Xenia**—Greene Co. Comrs., Court House, sanitary sewer system in Beavercreek Twp. **$1,000,000.**

STREETS AND ROADS

▲ **N. J., Belvidere** — Bd. Freeholders, Warren Co., reconstr. 3 mi. of Belvidere-Phillipsburg Pike from Lincoln St., Phillipsburg, to Uniontown Rd. intersection. **$2,600,000.** Harry L. Ackerman, Court House, engr.

▲ **N. J., Passaic**—City, City Hall, extension Hamilton Ave. to State St.; extension State St. on built-up area behind YMCA bldg.; extension Hoover Ave. by new road to connect with State St. **$2,688,500.** John Schneider, City Hall, engr.

▲ **WASHINGTON**—State Hy. Comn., Olympia,
Yakima Co.—by-pass around Yakima. **$4,700,000.** Bids 1958. W. A. Bugge, State Hy. Dir. CD 11/25.

AIRPORTS

▲ **Calif., San Francisco** — PASSENGER TERMINAL — City and San Francisco County, Pub. Utilities Comm., City Hall, plans by Welton Beckett & Assoc., 153 Maiden Lane, San Francisco, passenger terminal, cargo terminal, concourses, garage, etc., San Francisco International Airport. **$10,000,000.** John A. Blume & Assoc., 45-2nd St., San Francisco, Calif., consult. engrs. CD 11/9/56.

▲ **Ind., Indianapolis**—TRAFFIC CONTROL TOWER—Civil Aeronautics Admin., Airport Traffic Control Tower, Weir Cook Airport, 21,000 sq. ft. air route traffic control tower on 8 acre tract to house radar equipment with 400 mi. east-west range, Weir Cook Municipal Airport, **$1,400,000,** Edward D. James, 122 E. Michigan St., consult. engr. CD 6/7/56.

U. S. POSSESSIONS

▲ **Hawaii, Honolulu**—DWELLINGS— Centex Constr. Co., 4606 Greenville St., Dallas, Tex., 6,000 to 10,000 dwellings on 12,000 acre Keneohe Ranch Tract. **$100,000,000.**

PUBLIC BUILDINGS

▲ **Ala., Tuscaloosa**—COURTHOUSE—Co. Bd. of Revenue, Courthouse, plans by Charles McCauley, Jackson Bldg., Birmingham, Ala., courthouse and county jail. **$2,500,000.**

▲ **N. Y., Niagara Falls**—HOUSING—Niagara Falls Housing Auth., City Hall, plans by Shakelton and Fitzgerald, 1513 Lockport Rd., Niagara Falls, N. Y., 100 units public housing between Highland and Garden Aves. **$2,250,000.** CD 1/10/44.

▲† **W. Va., Sugar Grove**—RADIO RESEARCH OBSERVATORY—Dpt. of Navy, Constitution Ave. at 18 St. N. W., Wash., D. C., plans by Grad-Urbahn-Seeleye, 101 Park Ave., New York, N. Y., radio research observatory, near here, **$60,000,000.**

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—APARTMENTS, etc.—B. C. Deeane, c/o Daniel, Mann, Johnson & Mendenhall, archts., 3325 Wilshire Blvd., Los Angeles, 25 story, 17 story and 14 story apartments, 8 story office and shopping center, Barrington Plaza, **$14,000,000.**

Calif., Sunnyvale—HOME SUBDIVISION—Eichler Homes, 2001 El Camino, Palo Alto, 279 home subdivision at Wright Ave. and Homestead Rd. and Hollenbeck Rd., near Conway Rd. **$6,250,000.**

▲ **Ill., Joliet**—SHOPPING CENTER—Steinly Bros., Manhattan Rd., plans by Ralph Ernst, 11041 Ridgeway Ave., Chicago, Ill., shopping center, paving, southeast of Joliet, **$3,000,000.**

▲ **Ind., Indianapolis**—HOMES—J. & L. Realty, 3901 W. 30 St., 575 homes, east of Moller Rd. between W. 34th and W. 38th Sts., Eagledale. **$5,500,000.**

▲ **La., New Orleans**—OFFICE—Shepard M. Latter, 919 Gravier St., New Orleans, 14 story, steel, glass and marble office at Lake corner & Tulane Ave. M & S Rampart Sts. **$2,000,000.** A. W. Thompson & Assoc., 635 Comm. Pl., New Orleans, La., structural engrs. Alfred R. Salzer, 938 Bienville St., New Orleans, La., electrical engr.

▲ **Pa., Willow Grove** — SHOPPING CENTER — Hankin Bros., shopping center on Easton Rd. **$2,500,000.**

▲ **Tex., Houston** — BANK-OFFICE IMPRVS. — National Bank of Commerce, 712 Main St., plans by Kenneth Franzheim, 802 Lovett St., Houston, remodeling bank-office. **$2,000,000.** B. Johnson & Associates, 4926 Travis St., Houston, consult. engrs. CD 2/20/58.

▲ **Wash., Seattle** — SHOPPING CENTER — Food Giant Supermarket Co., c/o L. Haskins, 828 W. 125 St., shopping center at N. 175 St. and Aurora Ave. **$3,000,000.** Work to start this summer.

UNCLASSIFIED

▲ **Louisiana**—RURAL DISTRIBUTION LINES—Louisiana Rural Electric Corp., P.O. Box 111, Alexandria, La., 206 mi. distribution lines; 190 mi. 34.5 KV transmission lines; 19 mi. tie lines, 15 mi. conversions to increase voltage; 11 sub-stations and 65 irrigation pumps, etc. **$2,600,000.** CD 1/10/56.

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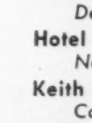

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS
July 15 Massachusetts

BUILDINGS—BA

▲ **Conn., Darien**—SCHOOL—BA 7/23—Town, Town Hall, Supt. of Schools, Renshaw Rd., high school, $3,000,000. Ketchum & Sharp, 227 E. 44 St., New York, N. Y., archts. Severud-Elstad-Krueger Associates, 415 Lexington Ave., New York, N. Y., engrs. Cosentini Associates, 10 Columbus Circle, New York, N. Y., mech. engrs. Tregenza & Briglia, 150 E. 39 St., New York, N. Y., site consultants. Bolt, Beranek & Newman, Inc., 50 Moulton St., Cambridge, Mass., consultant in acoustics. CD 5/14.

HEAVY CONSTRUCTION—LB & CA

▲† **Wexler Constr. Co., Inc.**, 118 Needham St., Newton, Highlands, Mass., CA **$3,729,708**, heliport, Fort Devens, ENG-19-016-58-170, AYER, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids June 12. **(Correction**—contractor). CD 7/12, under CA.

▲ **Perini Corp.**, 73 Mount Wayte Ave., Framingham, Mass., CA **$9,180,000**, est. $9,200,000, changing tracks and grading Rapid Transit extension over Highland Branch Tracks Boston & Albany R.R., Boston-Brookline-Newton, BOSTON, MASS. Metropolitan Transit Auth., 716 Park Square Bldg., Boston, Mass. CD 2/9/51.

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence,

M. **A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I., CA **$3,537,062** Bid 948, R.I. Contr. 5806, FA Proj. U-036 (3) Huntington Expressway (Roberts Expressway to Reservoir Ave.) Providence and Cranston. Bids May 28. CD 6/2, under LB.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol St., Hartford,

Arute Bros., Inc., 560 S. Main St., New Britain, Conn. CA **$2,761,146**, Proj. 46-68, c. conc. paving Hartford Springfield Expressway, FAP 1-139 (18), East Windsor and Enfield. Bids June 9. CD 6/11, under LB.

BUILDINGS—LB & CA

▲ **Perini Corp.**, 73 Mount Waite Ave., Framingham, Mass., LB **$2,709,000**, HHFA Proj. Mass. 19-CH-25 (D), four Men's DORMITORIES on Campus, WALTHAM, MASS. Brandeis University, 415 South St., Waltham, Mass. Bids June 30. CD 6/9.

▲ **Southern New England Contg. Co.**, 66 Sanford St., Hartford, LB **$3,265,000**, 4 story HOSPITAL addn., HARTFORD, CONN. St. Francis Hospital, 114 Woodland St., Hartford, Conn. BA 6/12. CD 6/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
July 15 Maryland July 23 New Jersey

STREETS AND ROADS
July 15 Maryland July 23, 24, 28 New Jersey

BUILDINGS—BA

▲ **N. Y., Jamaica**—HOUSING—BA 7/29—New York City Housing Auth., 299 Broadway, New York, Zone 7, general constr. heating and ventilating, electric work and plumbing for **(A)** Baisley Gardens Houses (Proj. No. NYC-32) Foch Blvd., 157th St., 116th Ave. to 195th St. and New York Blvd. **(B)** Baisley Park Houses (Proj. No. NY538) in area by Long Island Railroad, Foch Blvd., New York Blvd. to Foch Blvd. in area by 116th Ave., Bedell St., New York Blvd., Foch Blvd. to New York Blvd. and 159th St. **(C)** Baisley Gardens Houses (Proj. No. NYC-32) and Baisley Park Houses (Proj. No. NY-5-38) in areas above described, Queens Boro. Extended date. Plans deposit $75. CD 6/24.

BUILDINGS—SLC

▲ **N. Y., Olean**—ARTS COLLEGE, etc.—St. Bonaventure University, Olean soon lets contract (two stage project): 1st Phase, arts college and friary. $3,000,000. Brother Cajetan Baumann, 44 Whitehall, New York, N. Y., archt. Distasio & Van Buren, 136 Liberty St., New York, N. Y., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Harris Structural Steel Co.**, 419 Fourth Ave., New York 16, N.Y., CA **$5,551,360**, Throgs Neck Bridge Contr. TN-10C, Bronx approach superstructure steel, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N.Y. Bids June 18, CD 6/20 under LB;

Bethlehem Steel Co., 25 Broadway, New York, Zone 4, N.Y., CA **$5,641,654**, Throgs Neck Bridge Contr. No. TN-10D, Queens approach superstructure steel (New York).

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York 16, N.Y., CA **$7,022,290**, Throgs Neck Bridge Contr. TN-10A, Bronx approach substructure; and Contr. No. TN-10B, Queens approach substructure. NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N.Y. Bids June 17, CD 6/19, under LB.

▲ **Tufano Constr. Corp. & O. E. Contg. Co.**, 32-17 Lawrence St., Flushing, N. Y., LB **$6,046,969** (6 bidders), paving and utilities for Runway "V" and Inland Taxiways at New York International Airport, Contr. NYA-920.003, IDLEWILD, N. Y. Port of New York Authority, 111 8th Ave., New York 11, N. Y. Bids June 24. CD 5/26.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 6/27,

Pa.—**Lycoming Constr. Co.**, 127 Susquehanna St., Williamsport, Pa., LB **$2,433,341**, est. $3,200,000 (13 bidders) constr. 24,454 ft. divided hy. c. conc. 24 ft. wide each side divisor, Proj. 821-1 FAI Section Scranton-Binghamton Thruway, New Milford and Great Bend Twps., Susquehanna Co.;

Pa.—**Allegheny Contracting Industries, Inc.**, 801 Bingham St., Pittsburgh, Pa., LB **$3,393,119**, est. $4,000,000 (4 bidders) constr. 28,577 ft. divided hy. of c. conc. 24 ft. wide each side 56 ft. divisor; 5 grade separations, Proj. 803-1 FAI, Section Erie Thruway, McKean and Summit Twps., Erie Co.;

Pa.—**Elmhurst Contg. Co., Inc.**, 53-09 97th Pl., Corona, N. Y., LB **$3,417,047**, est. $5,000,000 (4 bidders) constr. 21,700 ft. divided hy. of c. conc. 24 ft. wide, each side 56 ft. divisors; 2 bridges, 3 grade separations (Proj. 808-1) FAI, section Erie Thruway, North East Twp., Erie Co. CD 6/4.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore 2, Bids opened 6/24,

Md.—**J. O. & C. M. Stuart, Inc.**, 3121 South St. N.W., Wash. 7, D. C., LB **$2,740,059** (5 bidders), grading, drainage, surf. 8.8 mi. along State Rte. 4. P. 735-1-320, Prince George Co.;

Md.—**Eugene Chaney**, Upper Marlboro, Md., LB **$588,596** (4 bidders) grading, drainage, surf. new lane and resurf. portion of existing lane US 301-5.283 mi. CH-257-19-520, Charles Co. CD 6/11.

BUILDINGS—LB & CA

▲ **D. Fortunato, Inc.**, 11 Garfield Ave., Floral Park, N. Y., CA **$2,713,642**, general contract JUNIOR-SENIOR HIGH SCHOOL, Broadway and Cherry Ave., BETHPAGE, N. Y. Bd. Educ., Union Federated School Dist. No. 21, Broadway School, Broadway Ave., Bethpage, N. Y. Grand total $3,570,172. Bids May 29. CD 11/18;

Willner Heating Co., Inc., 415 Lexington Ave., New York 17, N. Y. CA **$430,100**, heating and ventilating (Bethpage, N. Y.);

Giuliano Bros., 95 Railroad Ave., Patchogue, N. Y., CA **$426,430**, electric (Bethpage, N. Y.).

▲ **H R H Constr. Corp.**, 579 Fifth Ave., New York 17, N. Y. CA **$15,353,000**, general contract, Luna Park HOUSES (Proj. NYC-34) in area of Neptune Ave., W. 8th St., Surf andn Stillwell Ave., Brooklyn Boro, BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York, Zone 7, N. Y. Bids June 3. CD 6/16, under LB. Grand total $18,963,450. CD 6/16, under LB;

Fein-Schlosberg, Inc., 1770 Second Ave., New York 28, N. Y. CA **$1,437,000**, plumbing (Brooklyn, N. Y.);

AFGO Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y. CA **$1,195,000**, heating (Brooklyn, N. Y.);

(Continued on page 104)

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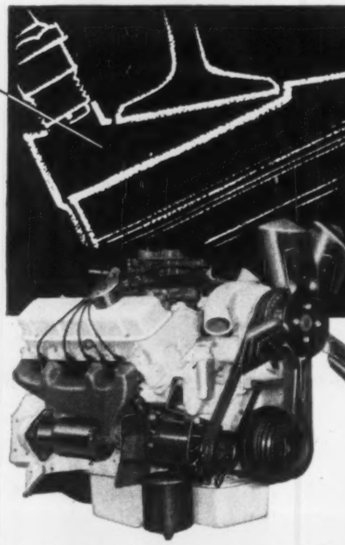

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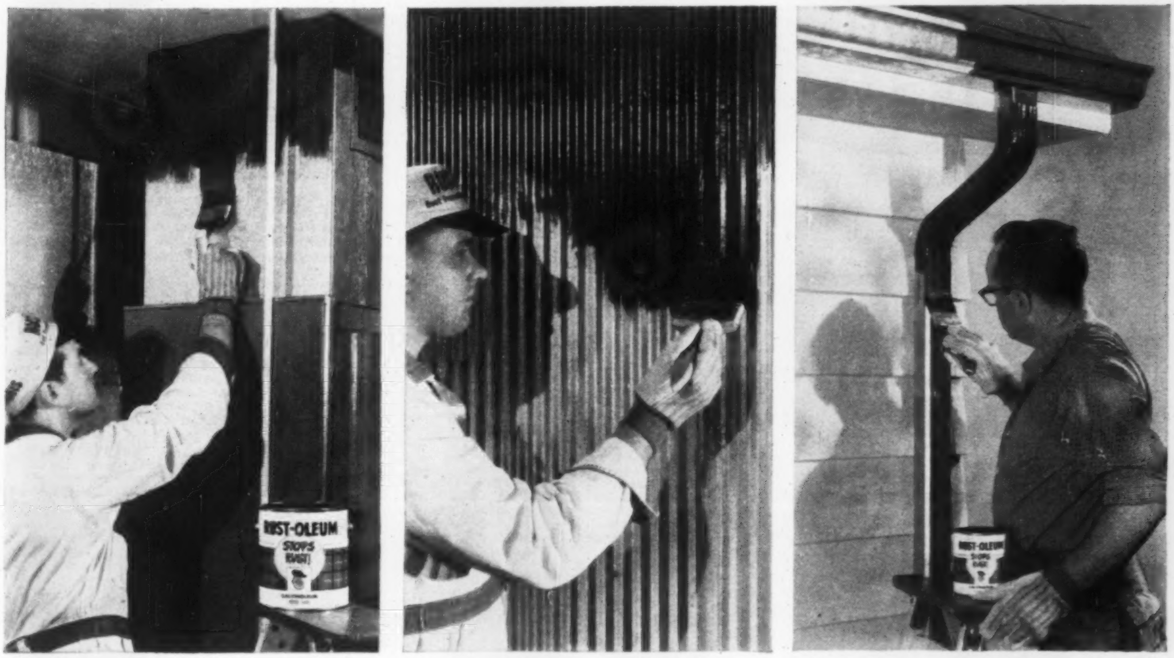

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(Continued from page 102)

Herman H. Schwartz, Inc., 179 So. Portland Ave., Brooklyn 17, N. Y. CA **$968,450,** electric (Brooklyn, N. Y.).

▲ **P. J. Carlin Constr. Co.,** 41-17 Crescent St., Long Island City 1, N. Y. CA **$2,197,250,** general contract OFFICE of Chief Medical Examiner, northeast corner 1st Ave. and E. 30th St., Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids May 21. CD 5/26, under LB;
Heating Maintenance Corp., 220 E. 138th St., New York 51, N. Y. CA **$735,851,** heating and ventilating (New York, N. Y.).

▲ **Driscoll-Moccia Constr. Co.,** 41 E. 42 St., New York 17, N. Y. CA **$11,848,488,** foundations and general constr. Manhattanville HOUSES, Proj. No. NYS 074, located in area bounded generally by W. 133 St., Amsterdam Ave., W. 129 St., W. 126 St., Broadway, W. 131 St. and Old Broadway, Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York, Zone 7, N. Y. Bids Apr. 29. Grand total $14,757,665. CD 5/1, under LB;
AFCO Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y. CA **$760,000,** heating and ventilating, Manhattanville Houses (New York, N. Y.);
Brown Elec. Co., 250 E. 43 St., New York 17, N. Y. CA **$934,400,** electrical work for Manhattanville Houses (New York, N. Y.);
Lipsky & Rosenthal, Lexington Ave. and 115 St., New York 29, N. Y. CA **$1,214,777,** plumbing for Manhattanville Houses (New York, N. Y.).

▲ **S. S. Silberblatt, Inc.,** 25 W. 45th St., New York 36, N. Y., CA **$14,094,000,** general contract **(A)** Rosedale Houses (Proj. No. NYC-311) located in area bounded by Rosedale Ave., Bruckner Blvd., Taylor Ave. and line parallel to Story Ave. separating City portion from Federal portion of project, **(B)** James Monroe Houses (Proj. No. NY-5-36) in area bounded by Taylor Ave., Lafayette Ave., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Grand total $17,610,700. Bids June 17. CD 6/19, under LB;
Heating Maintenance Corp. of New York, 220 E. 138th St., New York 51, N. Y., CA **$1,077,000,** heating and ventilating (New York, N. Y.);
Herman H. Schwartz, Inc., 179 So. Portland Ave., Brooklyn 17, N. Y., CA **$867,700,** electric work (New York, N. Y.);
Fein-Schlosberg, Inc., 1770 Second Ave., New York 28, N. Y., CA **$996,000,** plumbing for Monroe Houses (New York, N. Y.);
Otis Elevator Co., 260 Eleventh Ave., New York 1, N. Y., CA **$576,000,** elevators (New York, N. Y.)

▲† **J. D. Rich Co. Inc.,** 550 Summer St., Stamford, Conn., CA **$3,502,500,** 216 units Capehart HOUSING, at Syracuse Air Force Base, SYRACUSE, N. Y. Airforce Military Housing, 3800 Newark St. N.W., Wash., D. C. Bids May 27. CD 6/6, under LB.

▲ **Geiger & Slater,** 544 Grand Ave., Englewood, N. J., Own Forces, **$3,500,000,** 100 HOUSES, Roberts Rd., ENGLEWOOD CLIFFS, N. J.

▲ **Isadore & Harold Strauss,** 160-16 Jamaica Ave., Jamaica, N. Y., Own Forces, **$3,000,000,** 150 HOUSES, Edgeware Place and Wakefield Rd., NEPTUNE, N. J., Harsen & Johns, Piedmont Rd. and Summit St., Tenafly, N. J., archts.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Bids opened **6/26,**
Fla.—**White Constr. Co., Inc.,** Chiefland, Fla. LB **$2,495,525.** (5 bidders). road and bridges 4.744 mi. FAP I-4-2 (9) Job 7911-402 SR 400, Volusia Co.; LB **$139,918** (4 bidders) 2.721 mi. State Proj. 5568-150 SR 371-A, Leon Co.;
Fla.—**Marion Constr. Co.,** Box 577, Ocala, Fla. LB **$867,038** (5 bidders) imprv. 2.767 mi. FAP DF-016-2-(16) Job 3801-601 SR55, Taylor Co.;
Fla.—**J. W. Connor & Sons, Inc.,** Box 2522, Tampa, Fla. LB **$698,287.** imprv. 9.065 mi. St. Job 0404-151-SR70, Desoto Co.; LB **$127,362** imprv. 10 mi. St. Proj. 0708-175 SR 833, Hendry Co.;
Fla.—**Florida Asphalt Paving Co.,** Box 1013, Panama City, Fla. LB **$449,969** (5 bidders) imprv. 1.509 mi. FAP DF-017-1-(3) and DF-017-2 (13) Jobs 4601-601 and 4602-601 SR 30 US 98, Bay Co.;
Fla.—**Ray Constr. Co.,** Box 1789, Pensacola, Fla. LB **$469,905** (5 bidders) imprv. 5.929 mi. St. Proj. 5.929 mi. St. Proj. Job 4855-152 SR S 289, Escambia Co. CD 6/5 and 6/16.

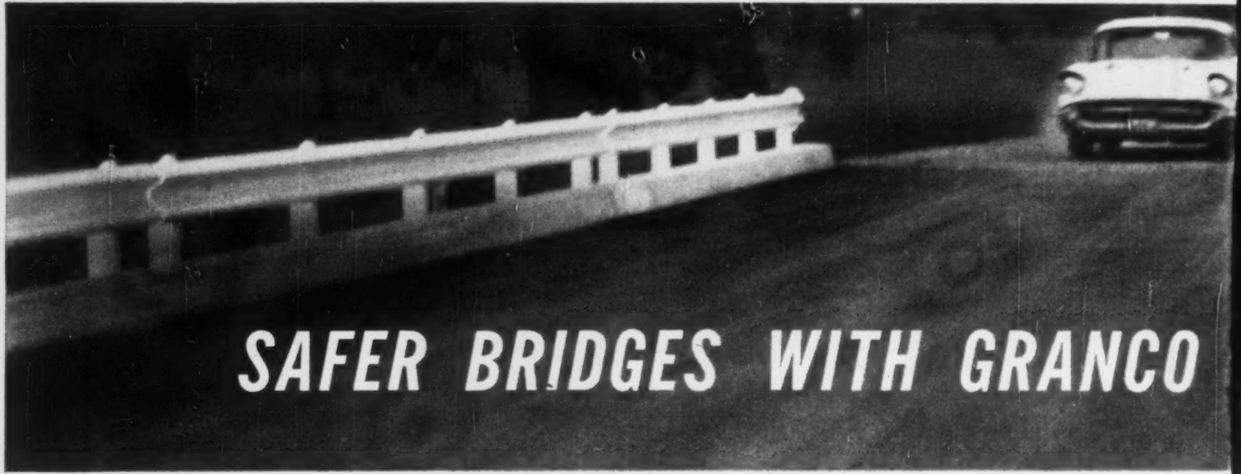
▲† **B. B. McCormick & Sons, Inc.,** 430 1st Ave. S., Box 248, Jacksonville, Fla. LB **$3,597,408.** Exten. Runway 18L-36R, U. S. Naval Air Station, Cecil Field, NBy-10242, Spec. 10242/57, JACKSONVILLE, FLA. Dist. P. Wks. Office, Sixth Naval Dist., Bldg. 13, Charleston, S. C. Bids June 24. CD 5/5.

▲ **Thorington Constr. Co., Inc. & Alfred Spear (Individual)** Box 10, Richmond, Va. LB **$6,494,432** constr. tunnel with 2 ventilation bldgs., superimposed thereon and 2 open ramp sections related changes in existing streets, storm sewers detours, etc. 0.43 mi. in Fort Lauderdale at New River FAP No. U-003-3 (28) Job No. 8601-204 SR 5 (USL) Broward Co., FLORIDA. State Rd. Dpt., Tallahassee, Fla. Bids June 26. CD 5/13.

MIDDLE WEST

BUILDINGS—SLC

▲ **Ill., West Chicago**—DISTRIBUTION CENTER—Western Electric Co., 195 Broadway, New York, N. Y.,



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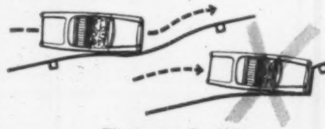

Eliminates Pocketing

soon lets contract, distribution center, incl. warehouse, office, repair shop, water sys., blacktop paving, parking area, S. E. corner Kress Rd. and Hawthorne Lane. $9,500,000. CD 10/7.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
O.—**Fischer Constr. Co.**, 4053 Clifton Ave., Cincinnati, O., CA **$2,207,145**, est. $2,230,000, Type T-71 and structures 4.347 mi. US R 40-5/98: SR 49-12.45, AC1-1097 (4) F-127 (2), Montgomery Co. CD 6/20, under LB.

O.—**The F. H. Brewer Co.**, P. O. Box 372, Lancaster, O., CA **$314,817**, wid'n., and b. conc. resurf. 7.248 mi. S.R. 75, Sections 17.25, 0.00 Falls Gore Twp. and Coal Twp., Type T-35, Hocking and Perry Counties. CD 5/20;

O.—**Shelly & Sands, Inc.**, Thornville, O., CA **$203,222**, est. $221,700, b. conc. wid'n. and b. conc. resurf. 6.329 mi. S.R. 77, Sections (12.04-12.15), Morgan and Bloom Twps., Morgan Co. Grand total $2,725,184. CD 5/20.

▲† **The Ferro Concrete Constr. Co.**, Mitchell Ave., Cincinnati, O., CA **$5,299,174**, Special AAA Facilities for Nike Site constr. for Cincinnati Defense Area, MC3480 6-27, OHIO. U. S. Eng., P.O. Box 2127, Huntington 18, W. Va. Bids June 25. CD 6/2.

▲ **INDIANA**—State Hy. Comn., John Peters, chn., State House Annex, Indianapolis, Zone 4, Bids opened 6/25.
Ind.—**Rieth-Riley Constr.**, Goshen, Ind., LB **$288,636**, est. $292,824 (2 bidders) c. conc. base wid'n. and bit. resurf., Constr. RS-4471, ST-31 K, DF-31 (15) 2, LaPorte Co.; LB **$2,027,768**, est. $2,191,512 (5 bidders), c. conc. pavement, Contr. R-4421, I-03-2 (8), Jackson Co.;
Ind.—**McMahan Ill. Corp.**, Rochester, Ind., LB **$598,742**, est. $625,996 (1 bidder), bit. pavement, aggregate base, Contr. R-4467, S-799 (2), Fulton Co.;
Ind.—**Olinger Constr.**, Huntingburg, Ind., LB **$973,631** est. $1,174,926 (3 bidders), bit. pavement with macadam base, Contr. R-4432, S-851 (1, 2), Perry Co.;
Ind.—**Dyer Constr. Co.**, Dyer, Ind., LB **$546,604**, est. $563,249 (4 bidders) bit. pavement, aggregate base, Contr. R-4400, S-17 (3), LaPorte Co.;
Ind.—**The Hunt Paving**, 2450 S. Tibbs Ave., Indianapolis, Ind., LB **$1,870,253**, est. $1,902,251 (2 bidders) c. conc. Contr. R-4405, F-616 (6), Union and Wayne Counties;
Ind.—**J. C. O'Connor & Sons**, 2104 Miner St., Fort Wayne, Ind., LB **$2,290,976**, est. $2,691,046 (5 bidders), c. conc. Contr. R-4424, F-77 (23, 24, 25), Starke Co.;
Ind.—**Johnston Roadbuilders**, 1 S. Eastern St., Joliet, Ill., LB **$500,530** (2 bidders), bit. pavement with macadam base, Contr. R-4468, S-817 (3), S-817 (4), Montgomery Co.;
Ind.—**McMahan Constr. Co.**, Rochester, Ind., LB **$1,025,276**, est. $1,130,827 (1 bidder), bit. pavement, aggregate base, Contr. R-4460, S-20 (2), S-348 (3), Fulton and Marshall Counties. CO 6/11.

BUILDINGS—LB & CA

▲ **Emerald Constr. Co.**, 1034 S. Kelner, Columbus, O., CA Est. **$2,500,000**, 200 ranch-type HOMES in Luxair development on Scioto-Darby Creek Rd. and Hilliard Cemetery Rd., HILLIARDS, O. C. V. Perry Co., 40 W. Gay St., Columbus, O.

▲ **Leland Baum Co.**, 4330 W. Fond du Lac, Milwaukee, Wis., CA Est. **$2,000,000**, general contract 160x120 ft. Rose Bowl BOWLING ALLEY BLDG., WEST ALLIS, WIS. H. M. Schudson, 234 N. Broadway, Milwaukee, Wis. CD 6/17.

▲ **Pearson Constr. Co.**, Benton Harbor, Mich., CA **$2,073,000**, general contract HIGH SCHOOL, ST. JOSEPH, MICH. City, Bd. Educ., St. Joseph, Mich. Bids June 10. CD 6/24, under LB.;
C. L. Mahoney Co., Benton Harbor, Mich., CA **$524,000** mechanical work (St. Joseph, Mich.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
July 29 South Dakota

HEAVY CONSTRUCTION—LB & CA

▲ **IOWA-ILLINOIS**—Davenport Bridge Comn., office of Mayor, City Hall, Davenport, Iowa,
Iowa-Illinois—**Dravo Corp.**, Neville Island, Pittsburgh, Pa., CA **$1,559,415**, sub-structure, for expansion and imprv. Iowa-Illinois Memorial Bridge over Mississippi River, between Bettendorf, Iowa and Moline, Ill., Contr. No. 1, Bids June 3. CD 5/13;
Iowa-Illinois—**Bethlehem Steel Co.**, E. 3 St., Bethlehem, Pa., CA **$3,989,255**, superstructure, Contr. No. 2, Bids June 24. CD 5/29.

▲† **Martin K. Eby**, 610 N. Main, Wichita, Kan., CA **$5,659,696**. Est. $4,864,000, Nike-Hercules Missile Areas, near Lawson and Lone Jack, Mo., Gardner, and Ft. Leavenworth, Kan., ENG-23-028-58-77, MISSOURI-KANSAS. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut, Kansas City 6, Mo. Bids June 25. CD 6/30, under LB.

▲† **Nelse Mortensen, Inc.**, 1021 Westlake North, Seattle, Wash. CA **$2,492,757**. officers quarters, airmens din-

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Auditorium dome erected in 9 days by a 5-man crew

John J. Kane Hospital, Allegheny County, Pittsburgh, Pa. Auditorium is 109 feet in diameter, seats 682 people.

This auditorium dome for the John J. Kane Hospital went up in a hurry. Four workmen and one superintendent, using one crane with a 125-foot boom, erected the steel work in 9 days.

In preparation for the dome erection, a 20-inch pipe pole with a 48-inch diameter plate top was erected and plumbed. The spider or top section of the dome, which is about 11 feet in diameter, was then placed on top of the pole and bolted down.

The USS Structural Steel ribs were prefabricated on a 53′-7½″ radius. They were made in two sections and were field-welded to form one rib almost 80 feet long, depending on the base elevation. The first rib was erected on the west side, followed by one on the east side. Erection then continued clockwise from both points.

The horizontal structural members were bolted in as erection progressed. Most of the bracing was omitted during erection and was filled in by the detail gang later on.

All sections were prefabricated in the plant of the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

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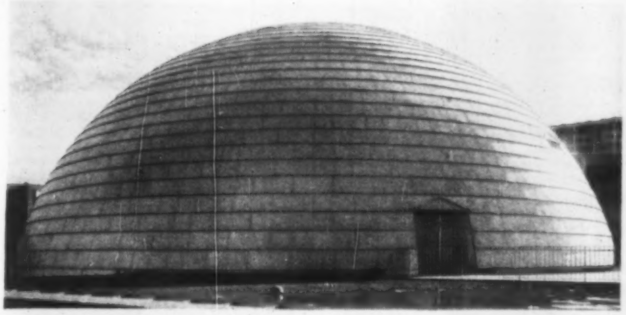

Auditorium dome fabricated from USS Structural Steel, erected by Adams Steel Erection, Kittanning, Pa. • Contractors: Sherry-Richards, Chicago, Ill. • Architects: Button and McLean—Mitchell and Ritchey, Pittsburgh, Pa. • Resident Engineer: Harry King, Allegheny County • Structural Engineers: L. W. Cook—R. A. Zern, Pittsburgh, Pa.

USS

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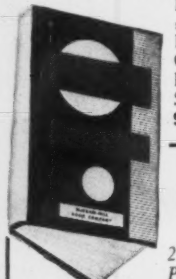

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(Continued from page 105)

ing hall and dormitories, ENG-45-164-58-60, GLASGOW, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 10, awarded June 26. CD 6/13, under LB.

BUILDINGS—LB & CA

▲ **H. A. Lott, Inc., Gen. Contractor,** 4822 Allum Rd., Houston, Tex., LB **$2,035,900,** Proj. 10-4, P.H.A. HOUSING, WACO, TEX. Housing Auth. City of Waco, Box 978, Waco, Tex. Bids June 24. CD 6/6;
M. Z. Collins Constr. Co., Box 815A, Austin, Tex. LB **$347,224.** Proj. TEX 10-7 P.H.A. WELLINGS UNITS (Waco, Tex.).

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
July 30 California

STREETS AND ROADS
July 22 Idaho July 30 California

▲ **Calif., Los Angeles**—BA 7/25—Los Angeles Co. Flood Control Dist., 2250 Alcazar St., constr. storm drains, Proj. 19, Hollydale "A" in South Gate, Paramount, and Downey. $3,000,000. CD 11/7/52.

▲ **Utah, Salt Lake City**—ADMINISTRATION BLDG.—BA 7/31—Salt Lake City Corp., L. C. Romney, City Comn., City-County Bldg., administration bldg. at airport $3,750,000. Ashton, Evans & Brazier, 24 SW Temple St., Salt Lake City, archts. CD 9/20/56.

BUILDINGS—BA

▲ **Calif., Los Angeles**—SCHOOL—BA 7/25—Bd. Educ., 1425 S. San Pedro, constr. Granada Hills High School, Zelzah St. $4,000,000. CD 12/2.

▲ **Calif., Oakland**—OFFICE etc.—BA 8/12—State Div. Architecture, 1120 N. St., Sacramento, 8 story office and 1 story bldg. with bsmnt. and roof structures about 200,000 sq. ft. floor area for State Dpt. Finance, W.O. 3848-GC-2. $2,710,000. Plans deposit $100.

HEAVY CONSTRUCTION—LB & CA

▲† **Rothschild, Raffin & Weirick,** 274 Brannan St., San Francisco, Calif. CA **$6,500,527.** Sacramento Deep Water Channel Proj., barge canal lock, bascule bridge power control and lighting sys. Spec. 1455, ENG-04-167-58-40, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 24, awarded June 27. CD 6/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,
Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif. CA **$7,462,731** first unit exten. complex of interchange and ramp structures at Alemany Blvd. and James Lick Memorial Freeway involving 2 mi. bridge structures in San Francisco, IV—S.F.—2,68, San Francisco Co. Bids June 18. CD 6/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 6/26,
Boespflug Constr. Co., & J. T. McLaughlin, 605 S. Locust Ave., Los Angeles, Calif. LB **$2,804,457** (9 bidders) constr. 1.2 mi. 8 lane Golden State Freeway between Mission Rd. and 1/10 mi. north of Pasadena Ave., incl. 7 structures, VII-L.A 4-LA, Los Angeles Co. CD 5/29.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, Calif., CA **$8,394,835,** constr. 4.1 mi. 8 lane freeway on Ventura Freeway, U. S. Hy. 101 between Laurel Canyon Blvd. and interchange at Jct. with San Diego Freeway incl. 15 bridges, VII-L.A-2-158 LA, Los Angeles Co. Bids June 12, awarded June 27. CD 6/16, under LB.

▲† **Gordon H. Ball,** 300 Camille Ave., Danville, Calif. LB **$2,076,876** (4 bidders), constr. runway extend. approach lighting and optical landing sys., at Marine Corps Air Station, Spec. 10014, EL TORO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids June 24. CD 6/5.

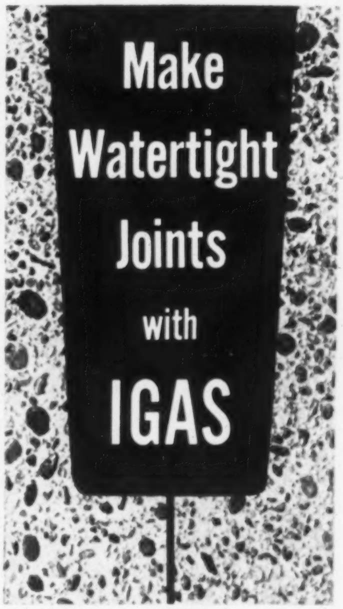
▲ **General Electric Co.,** 235 Montgomery St., San Francisco, Calif. CA **$2,442,482** furnishing, del. two 68,000 kva. vertical I shaft, water wheel driven, alternating current, synchronous type generators and excitation switch with appurtenant equipment and controls for Jaybird Power House, Upper American River Proj., El Dorado Co., SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 2101 K St., Sacramento, Calif. Bids June 18, awarded June 26. CD 6/20, under LB.

▲† **Gordon H. Ball, Inc. & Harbison & Mahoney,** 300 Camille Ave., Danville, Calif. CA **$2,299,991** air reserve hangar, heating plant, apron operational utilities, roads, McClellan Air Force Base, ENG-58-63, SACRAMENTO, CALIF. U.S. Eng., 1209 8th St., Sacramento, Calif. Bids June 24, Awarded June 25. CD 6/26, under LB.

BUILDINGS—LB & CA

▲† **Hal B. Hayes & Assocs., Inc.,** 1235 Sierra Alta Way, Los Angeles, Calif. CA **$9,078,500.** 570 Capehart HOUSING UNITS, BEALE AIR FORCE BASE, CALIF. Base Procurement Office, Beale Air Force Base, Calif. Bids June 3. CD 6/10, under LB.

▲ **Continental-Heller Constr. Co.,** 4671 24th St., Sacramento, Calif. LB **$2,990,000** (6 bidders) RESIDENCE HALLS to house 600 students, incl. three 5 story



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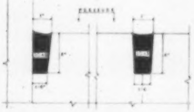

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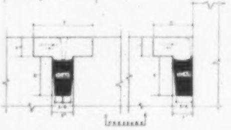

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residence units and central dining and recreation bldg., DAVIS, CALIF. Office of Architects & Engineers, Davis Campus, University of California, Davis, Calif. Bids June 26. CD 6/10.

▲† **Murray-Sanders & Assocs. and George A. Fuller Co.**, 2116 S. Main St., Santa Ana, Calif. CA **$7,154,914** (joint venture) 550 units Capehart HOUSING, HAMILTON AIR FORCE BASE, CALIF. Procurement Officer, Hamilton Air Force Base, Calif. Bids June 12. CD 5/20.

▲† **Curtiss-Wright, Industrial & Scientific Products Div.**, Quaker Bldg. Rd., Plainsboro, N.J. LB Est. **$2,000,000.** Ralph M. Parsons Co., 617 S. Olive, Los Angeles, Calif. major subcontractor (15 bidders) design, constr. and test operation of gamma facility to be known as HIGH INTENSITY FOOD IRRADIATOR (HI-FI) at Sharpe General Depot for Quartermaster Corp., Irradiated Products Inc. (Continental Can Co., Armour & Co., General Foods & Food Machinery and Chemical Co.) is in charge of production planning facilities, LATHROP, CALIF. Atomic Energy Comn., 518 17th St., Oakland, Zone 12, Calif. Bids May 16. CD 4/16.

▲† **General Investment Co.**, Longview, Wash., CA **$3,060,000,** 200 units FAMILY HOUSING, Larson Air Force Base, Inv. 11-626-58-5CH, MOSES LAKE, WASH., Procurement Office, Larson Air Force Base, Moses Lake, Wash. Bids June 3. CD 6/6, under LB.

▲ **Berry Constr. Co.**, 143 South Granite St., Ontario, Calif. LB **$2,202,170** (8 bidders) constr. Monte Vista HIGH SCHOOL, ONTARIO, CALIF. Chaffey Union High School Dist., 1245 N. Euclid Ave., Ontario, Calif. Bids June 25. CD 6/16.

▲† **Sun Gold, Inc., L. E. Dixon Co. & American Pipe Co.**, 3631 10th St., Riverside, Calif. CA **$7,894,210,** 540 Capehart FAMILY HOUSING UNITS at McClellan Air Force Base, SMPPCA, SACRAMENTO, CALIF. Directorate of Procurement & Production Bldg. 10, McClellan Air Force Base, Sacramento, Calif. Bids June 10, Awarded June 28. CD 6/12, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS
July 22 Alberta

HEAVY CONSTRUCTION—LB & CA

▲† **Argo Constr. Ltd.**, 3901 Namur St., Montreal, Que. LB About **$2,200,000** (9 bidders) constr. air passenger terminal, shop, ground powered equipment, squadron operations bldg., operation mission training bldg., readiness crew bldg., ready aircraft shelter at Harmon Air Base, ENG-30-347-58-14, STEPHENVILLE, NEWFOUNDLAND. U.S. Eng. Easter Ocean Dist., c/o Defence Constr. (1951) Ltd., Room 4, Temporary Bldg., 65 Lyon St., Ottawa, Ont. Bids June 24. CD 6/2.

▲ **Perini Ltd.**, 49 Jackes Ave., Toronto, Ont. CA Est. **$12,000,000.** 20 story, bsmnt., sub-bsmnt., etc. OFFICE BLDG., King and Yonge Sts., TORONTO, ONT. Tusca Investments Ltd., 55 Yonge St., Toronto, Ont. M. S. Yolles & Assocs., 111 Richmond St. W., Toronto, Ont., engrs. Awarded June 23. CD 2/19.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Peter Kiewit Sons Co.**, 1300 Aloha St., Seattle, Wash., CA **$1,885,286.** constr. Nike storage facilities at 4 sites near Fairbanks (Inv. 58-58) ALASKA. U.S. Eng., P. O. Box 1288, Anchorage, Alaska. Bids June 25. CD 6/4.
S. Patti Constr. Co., MacDonald Constr. Co. and M-B Contg. Co., Inc., 1310 S. Grand Ave. St. Louis, Mo. CA **$1,761,994.** constr. Nike storage facilities at 3 sites near Anchorage Inv. 58-57 (Alaska)

BUILDINGS—LB & CA

▲† **M-B Contracting Co., Inc.**, Lloyd Bldg., Seattle 1, Wash. CA **$5,883,808.** Sched. A, family HOUSING at Fort Richardson, Inv. 58-55 ALASKA and CANADA. U. S. Eng., 1519 S. Alaska Way, Seattle, Wash. Bids June 17. CD 6/20, under LB;
Manson Constr. & Eng. Co. and Osberg Constr. Co., 5209 E. Marginal Way, Seattle, Wash. CA **$4,402,872,** Sched. B, family housing at Ladd and Eielson Air Force Bases and along Haines-Fairbanks Fuel pipe line in Canada (Alaska and Canada)

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **International General Electric Co.**, 150 E. 42nd St., New York, N. Y., U.S.A., CA Est. **$8,900,000.** Total $42,500,000. 6 hydraulic turbine generators and related equipment in Aldeadavila Hydro-electric plant on Duero River near Spanish-Portugese Border, SPAIN. Iberduero S. A., Madrid.

BUILDINGS—LB & CA

▲ **Gibbs & Hill, Inc.**, 561 8th Ave., Penn Station, New York, N. Y., U.S.A., CA design and construct thermal power station, Compostilla II, near Ponferrada, SPAIN. Total est. **$27,600,000.** Empresa Nacional de Electricidad, S. A., c/o Govt. of Spain, Madrid;
Westinghouse Electric International Co., 40 Wall St., New York, N. Y., U.S.A., CA 125,000 kw turbine generator (Spain);
Foster Wheeler Corp., 165 Broadway, New York, N. Y., U.S.A., CA boiler and accessories (Spain).

(Proposal Advertisement see pp. 122 to 125)

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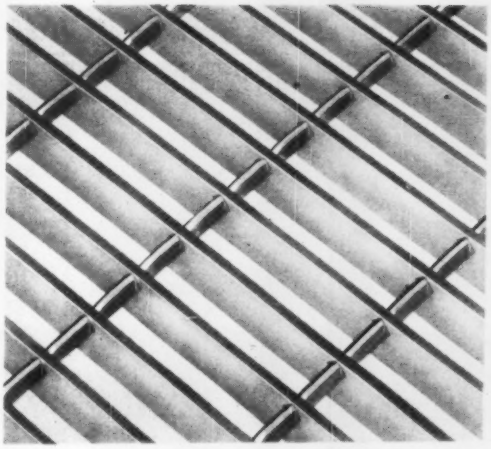
ALUMINUM GRATING



First improvement in rectangular mesh grating in over a quarter-century!

- High strength-to-weight ratio.
- Cross bars can't turn, come loose or fall out.
- All sizes—¾" x ⅛" to 2¼" x 3/16".
- Standard mesh with main bars on 1-3/16" centers and close mesh with main bars on .915 centers with cross bars on 4" or 2" centers.
- Safe, slip-proof surface.
- Available in plain or serrated main bars.

*Patents Pending

You'll want full details about this aluminum grating Write for Bulletin E-78

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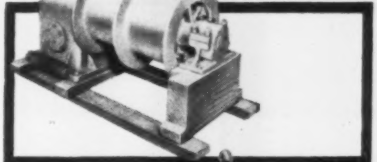

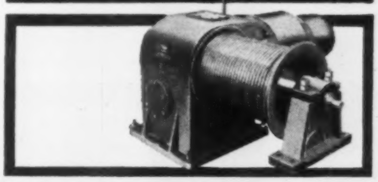

Totally enclosed, worm geared drive 5 HP to 30 HP. Various Drum sizes, Electric powered; Remote controlled. Built to suit your requirements from Standard Parts.

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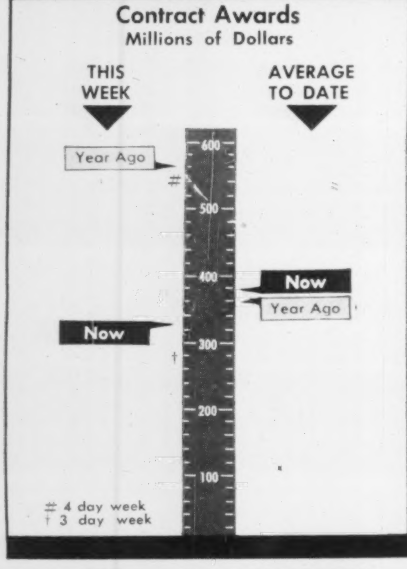
Construction Scoreboard

ACTIVITY THIS WEEK

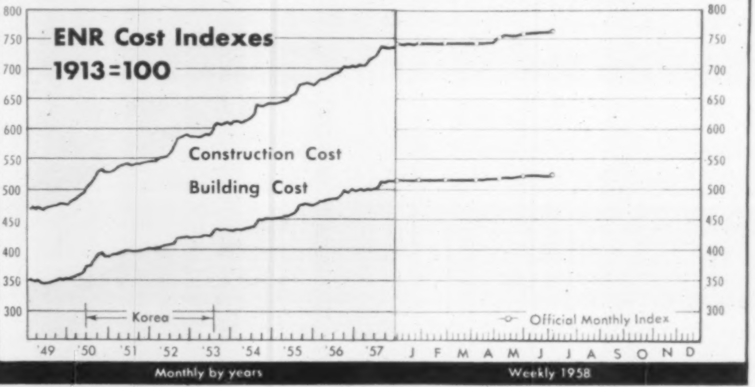


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of July 3 1958	% Change from May 29 1958	% Change from Jun. 27 1957
Construction Cost	762.52	+0.7	+5.3
Building Cost	524.29	+0.6	+3.5

*Official Monthly Index for July 1958.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.030; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 28 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$559.0	$10,653.4	+4
Private	100.8	4,376.6	−8
Public	458.2	6,276.8	+14
State & Municipal	260.9	4,451.9	+13
Federal	197.3	1,824.9	+16
By Type of Work			
Public			
Waterworks	6.5	165.6	−20
Sewerage	8.0	325.7	+11
Bridges*	43.2	364.0	−11
Highways	86.7	1,730.1	+6
Earthwork, Waterways	18.9	675.1	+5
Buildings, Excl. Housing	64.0	1,426.6	+15
Housing	151.7	802.6	+105
Unclassified	79.2	795.7	+14
Private			
Mass Housing	43.2	2,009.3	+21
Commercial	16.4	1,054.3	+9
Industrial	39.3	1,049.0	−43
Unclassified	1.9	255.4	−2

*Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of July 3 millions	Cum. 27 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$98.6	$2,915.8	−11
State and Municipal:			
All Except Housing	61.6	3,668.7	+27
Housing	...	33.8	−78
Federal Loans	2.6	94.5	−34
Federal Aid	...	....	−100
Total Nonfederal	$162.8	$6,712.8	−21
Federal Appropriations:			
Projects in U. S.	$ 35.0	$847.4	+178
Outside U. S.	...	5.3	−68
Total New Capital	$197.8	$7,565.5	−15

WAGE RATES, 20-cities average

	July 1958	% Change from June 1958	% Change from July 1957
Common	$2.463	+0.9	+7.1
Skilled (average 3 trades)	3.720	+1.0	+5.0
Bricklayers	3.989	+1.3	+4.8
Structural Ironworkers	3.692	+0.4	+4.6
Carpenters	3.477	+1.3	+5.6
Equipment operators (average three types)	3.369	+0.3	+6.6

MATERIAL PRICES, 20-Cities average

Structural Steel (average 3 mills), per cwt	5.275	0	+5.5
Lumber, 2x4 Fir, per M fbm	113.35	+0.6	−1.9
Lumber, 2x4 Pine, per M fbm	100.62	+0.4	−1.2
Cement, bulk, per bbl	3.982	+0.7	+1.5
Sand, per ton	2.501	0	+2.1
Ready-mixed concrete, per cu yd	13.871	+0.1	+2.2
Gypsum sheathing, ½"x2'x8', per Msf*	62.792	0	+0.1
Fiber board sheathing, ½" sq. ed., per Msf*	71.445	+0.1	−1.6
Mineral wool insulation, 3' batts, per Msf*	70.513	0	−1.6
Crushed stone, 1½", per ton, CL	2.838	0	+0.3
Concrete blocks, sand gravel, 8"x8"x16", each*	228	0	+0.9

	June 1958	May 1958	June 1958
Brick, common per M	37.480	−1.3	−0.1
Lime, hydrated finishing, per ton, CL	38.713	+0.3	+6.7
Structural clay tile, 3x12x12", per M, 2,000 up*	185.403	+0.1	+2.7
Vitrified clay sewer pipe, std 12", per ft	1.270	+0.8	−0.2
Concrete sewer pipe, 12", per ft	1.290	0	+11.8

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1957	1913=100	1919=100	1913=100	1919=100	1913=100	1949=100
Jul	724.15	151.81	506.62	144.01	587	170
Aug	738.63	154.84	516.90	146.93	528	153
Sep	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	723.85	151.74	508.67	144.59	517	150
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	520	150
Apr	745.78	156.34	516.61	146.85	585	169
May	751.57	157.56	513.48	147.38	674	195
Jun	757.31	158.77	521.09	148.12	661	191
Jul	762.52	159.85	524.29	149.03	...	...

"Fastest dirtmover made"

says Columbus, Ohio, Contractor

LETOURNEAU-WESTINGHOUSE

▲ Grading a housing development, D 'Pull, push-loaded by a motor grader, picks up a heaping load of clay and topsoil fast. On this same job, "D" self-loaded topsoil and spread it on lawns.

LETOURNEAU-WESTINGHOUSE

◀ D Tournapull spreads material to bring up level of lots in LeeWood Garden Subdivision near Columbus, Ohio. This project, laid out to accommodate 360 homes, was 1 of 7 such operations being worked on at one time by A. W. Burns & Sons Construction Co.

A. W. Burns & Sons Construction Co., Columbus, Ohio, specializes in building sites for housing developments. Their production schedule, a tough one, often calls for working at several scattered sites at the same time. According to Melvin S. Day — Executive V. P. and General Mgr. — the company has worked as many as fourteen housing developments and housing sites at once!

Shuttles equipment between jobs

To profitably handle so many scattered hit-and-run earthmoving jobs, they use fast-moving, rubber-tired LeTourneau-Westinghouse D Tournapulls®. Their "D's" work efficiently wherever needed . . . travel under their own power between projects, over highways, at controlled traffic speeds. "D's" can drive safely over paving, curbs, and railroad tracks, without causing damage.

Works in tight quarters

Grading these housing developments, 'Pulls* work in tight quarters — over narrow haul-roads, between buildings, where other units can't readily maneuver. Tournapull's positive, electric, kingpin power-steer enables machine to turn around in an area only 24′3″ wide . . . even less than its own 28′1″ length.

Self-loads or push-loads

Pleased with the mobility, speed, and performance of their D 'Pulls — General Manager Day says, "The high speed and mobility of our 'D's' is perfect for work around the city. *These 'D's' are the fastest dirtmovers made for the jobs we use them on.* We have always found them dependable. We generally push-load on heavy grading but use our 'Pulls without a pusher for topsoil on lawn-grading around houses, and also for fine-grading streets."

For clean-up, and other scattered small-yardage earthmoving jobs, the "D" self-loads up to 6 yds. in most dirt. On larger production dirtmoving, "D" can be push-loaded to full capacity in less than a minute.

Investigate today

Contractors all over the country have found electric-control Tournapulls ideally suited to land leveling and street construction for subdivisions and other real estate developments. Why don't you investigate these advantages? Write or call today for additional information.

*Trademark DP-1655-DCJ-1

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Where quality is a habit

Awards in First Half Top '57

Heavy construction contract awards during the first half of this year scored the sharpest recovery ever recorded by ENR. The unprecedented rally pushes the six month total of $9.6 billion 2% above the same period of last year. It also is the second largest contract volume ever recorded during a first half. The record was set in 1956 when contracts tallied $1.9 billion.

The month of June, with $1.9 million in awards, established a record for a June month.

• Sparked by public works—Public construction gets the largest share of credit for boosting contracts. During the second quarter, federal awards jumped to nearly two and one-half times the first quarter volume.

Federal work topped 1957 by 5%, with a total $1.5 billion, during the first six months. This is a new postwar high for the first half.

State and municipal public works contracts also soared in the second quarter to push the six month total to a record just short of $4 billion, a 10% hike over 1957.

Only two major types of public construction failed to beat 1957 first half totals. Waterworks were off 22% and bridge contracts down 19%.

The gains ranged from 1% for highways to 65% for public housing. Most of the latter was "Capehart" military housing. Sewerage and public buildings other than housing scored an 18% gain over last year's first six months. Earthwork-dams-waterways awards were 3% higher. Public unclassified contracts were ahead by 4%.

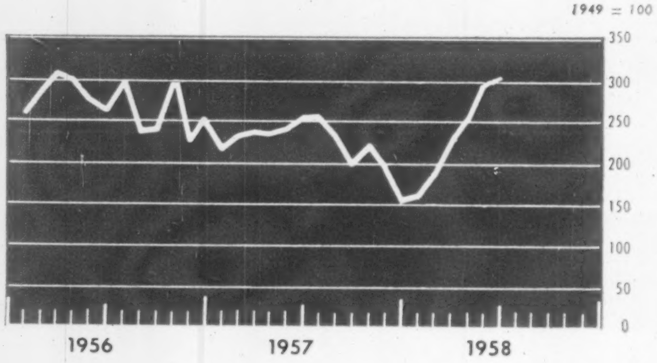
Highway contracts in the first half set a six month record total of $1.5 billion.

• Private award rate slips—Although private construction contracts showed some added life in April and May, the rate of awards slipped in June to about the same as the low rates of February and March. The total for six months is 5% under 1957 and 42% below the record for the period set in 1956.

Industrial building accounts for the 1957-'58 decline in total private awards. Lower industrial plant contracts offset gains of 15% in commercial building, 23% in mass housing and 5% in unclassified work.

(Continued on page 114)

Heavy Construction Contracts . . .



. . . Now equal to '56 boom peak

Engineering Construction Contracts—June '58

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks excavation, drainage and irrigation, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.*

Four Weeks—Thousands of Dollars (000 Omitted)

	June, 1958							U. S. Cumulative Six Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958	1957	'57 to '58	June 1958
Public Works											
Waterworks	515	2,504	8,605	3,092	9,883	3,445	28,044	157,280	200,785	−22	1,708
Sewerage	3,749	15,559	13,179	13,438	7,794	9,824	63,543	304,645	258,475	+18	2,956
Bridges	1,669	18,448	6,202	27,096	30,165	3,935	87,515	296,047	366,327	−19	5,162
Earthwork and waterways	1,950	75,585	29,438	18,114	21,507	51,281	197,875	604,304	589,466	+ 3	5,426
Streets and roads	11,811	63,637	69,714	46,409	90,425	30,833	312,829	1,541,484	1,521,529	+ 1	28,896
Public buildings, residential	11,058	19,079	14,635	6,722	34,052	35,120	120,666	585,530	354,046	+65	1,744
Other public buildings	13,673	39,841	23,600	59,975	28,460	57,076	222,625	1,302,151	1,105,567	+18	15,566
Unclassified	21,825	31,605	49,855	27,437	43,988	58,300	233,010	664,390	636,779	+ 4	12,015
Total public	**66,250**	**266,258**	**215,228**	**202,283**	**266,274**	**249,814**	**1,266,107**	**5,455,831**	**5,032,974**	+ 8	**73,473**
Federal government (included in above classifications)	28,948	28,810	92,772	64,229	94,212	132,734	441,705	1,457,328	1,381,890	+ 5	16,120
Private											
Bridges	....	250	....	....	....	....	250	8,436	1,327	+536	....
Industrial buildings	5,622	22,816	33,098	14,854	18,698	66,933	162,021	987,021	1,733,319	−43	16,965
Mass housing	33,678	130,675	9,852	60,044	57,524	19,086	310,859	1,921,626	1,562,636	+23	30,036
Commercial buildings	11,146	34,650	4,018	33,093	29,581	5,612	118,100	1,010,806	882,640	+15	15,959
Unclassified	1,367	2,635	10,457	8,416	19,677	......	42,552	244,444	232,648	+ 5	2,533
Total private	**51,813**	**191,026**	**57,425**	**116,407**	**125,480**	**91,631**	**633,782**	**4,172,333**	**4,412,570**	− 5	**65,493**
Total Engineering Construction:											
June, 1958—4 weeks	**118,063**	**457,284**	**272,653**	**318,690**	**391,754**	**341,445**	**1,899,889**	....	....	....	**138,966**
May, 1958—5 weeks	186,062	766,170	217,331	419,858	437,781	286,473	**2,313,675**	....	....	....	219,191
June, 1957—4 weeks	115,662	299,383	147,942	501,754	272,925	223,701	**1,561,367**	....	....	....	124,944
Six Months—1958	**612,860**	**2,702,728**	**1,201,468**	**1,752,816**	**1,912,050**	**1,446,242**	....	**9,628,164**	....	+ 2	**834,051**
Six Months—1957	622,817	2,311,575	1,067,690	2,045,885	1,733,827	1,663,750	....	....	9,445,544	....	869,969
% Change '57 to '58	−2	+17	+13	−14	+10	−13	....	....	....	....	−4

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Company . . . .
Address . . . .
City . . . . State . . . .

(Fill out and mail to your LeTourneau-Westinghouse Distributor)

Let us prove to you that

L-W 440 Adams† Grader does more work . . . at less cost than any other grader in the 115 hp class

There's only one way to buy a motor grader, and that is on the basis of performance! We know . . . from competitive tests, and from owner reports . . . that the L-W 440 Adams Model motor grader will out-perform any other grader in its class. We'd like to prove it to you!

This improved machine, with choice of GM or Cummins diesel engine, constant-mesh transmission, 8 forward speeds to 25 mph, 4 reverse speeds to 13 mph, 3 optional creeper speeds, balanced weight distribution for "bull-dog" traction, and the best blade control available . . . will serve you longer, do more work, at *less cost* than 115 hp graders of any other make.

The "440" can UP your profits. Let us show you this machine in action. Fill out and mail the above "request for demonstration" to your LeTourneau-Westinghouse Distributor.

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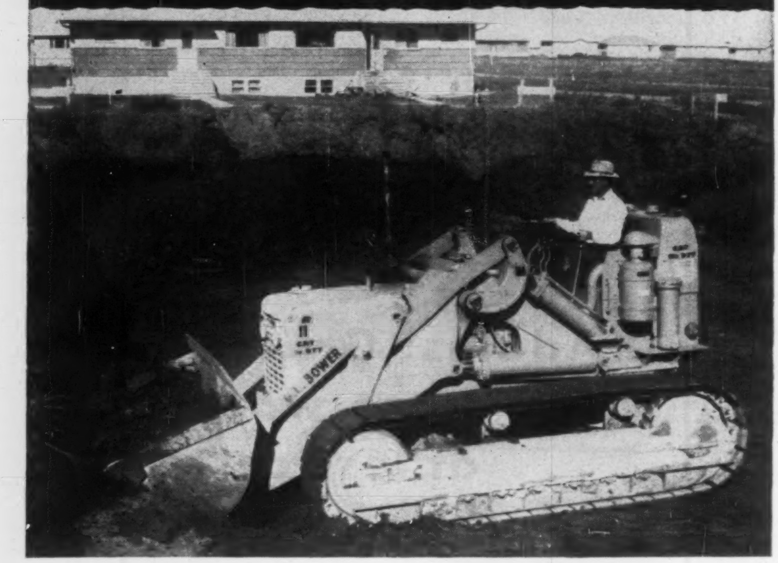

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HARDSURFACING with an automatic welder gives a carefully controlled, long lasting surface.

The Lincoln automatic process deposits a special alloy surface which will stand hard wear twice as long as original equipment. The deposited surface is so smooth that no machining is required. Lincolnweld is fast and inexpensive too.

Many repair shops and tractor dealers offer this service. But be sure to specify Lincoln hardsurfacing. Or, call your nearby Lincoln representative about setting up your own hardsurfacing unit. Write for literature.

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LINCOLN

THE LINCOLN ELECTRIC COMPANY - DEPT. 3443 • CLEVELAND 17, OHIO

(*Continued from page 112*)

• **A new trend?**—The slackening in June private work may signal the trend for the next few months. Proposed private construction entering the planning stage dropped below year-ago volumes in each month this year except in June. In that month, ENR's private construction backlog rose, bringing the six month total to $112 billion. However, because of outflow the amount is $100 million below the cumulative figure of May 31. The direction of the proposed work indicates no increase in private awards in the next six months. This suggests that awards for private construction during the next few months will be under the second quarter rate.

Should there be less bounce in private awards during the remainder of this year, pressure will be on state and municipal work to support new construction business at its current high level. And state and local awards can be expected to maintain their record-breaking pace through 1958. The amount of work in these areas in the planning stage has climbed steadily in the last several years. The trend continues upward this year.

• **State activity strong**—Heavy construction is running ahead of last year in 23 states. The gains range from 4% in New Mexico to 226% in Maine. Maine's lead over last year stems from major federal projects.

However, a 133% gain in Alabama reflects a fourfold boost in private awards, with industrial building the star performer.

New York State is first in contract volume with $1.2 billion during the first six months.

Declines were registered in such major states as California, off 11%; Ohio, down 9%; Illinois, down 17%; and Michigan, down 20%.

Two Consultants Are Named To Design $71 Million Road

Pennsylvania's Department of Highways has named two consulting engineers for preliminary design work on a 35 mile, $71 million section of interstate highway between Washington, Pa., and the Pennsylvania Turnpike, northwest of Pittsburgh.

Michael Baker, Jr., Inc., of Rochester, Pa., has 16 miles of the project on the northern half, while Berger Associates, Harrisburg, has the 19 miles from Washington, Pa., northward. The stretch of road to be designed by the two firms eventually will be a link in a north-south highway across western Pennsylvania between Erie and the West Virginia border.

Public Housing Request to Spark Fight

Proposals to enlarge construction program opposed by Administration because of large approved backlog

Democrats hope to push through the Senate a bill to break the federal-state standoff on public housing construction. In the last few years, the program has been riddled with dissension. As a result, construction has fallen far below levels authorized by Congress.

Democrats, with the exception of some Southerners, are backing a program they hope will speed the construction program. But a major fight looms over the controversial issue. The Administration is vigorously opposed to the Democratic plan and expects to lose a half-dozen Republican votes when the Senate takes up the omnibus housing bill this week.

The Democrat-backed measure, among other things, would authorize construction of an additional 35,000 units this fiscal year. The Administration strongly opposes this. It says 134,000 units already are approved for construction and until they are built, no more should be authorized.

Backers of public housing say the Administration is opposed to public housing and has acted to slow it down. This is true to an extent, but it is not the whole answer. The issue is many-sided, complicated by economic, political and social factors.

• Opposition growing—In one respect, the problem is to adjust a depression-born program to current circumstances. Though widely accepted as a social measure during the great depression, public housing has met increasing opposition in recent years.

Real estate brokers opposed to the concept of public housing have proved difficult to deal with. And attempts to establish projects outside high-rent downtown districts have run into strong opposition from homeowners in outlying and suburban sections. Even many low-income families have refused to move into public housing because they believe a social stigma is attached to it.

Then there are the so-called "problem families" in public housing projects. They have proved troublesome tenants by not taking care of the facilities. Many people, including some local public housing officials, argue that mixing rural and urban families of diverse backgrounds has led to the spread of juvenile delinquency. However, this is denied by the Public Housing Administration in Washington.

All of these factors to some degree have resulted in a slowdown in public housing construction. But perhaps the most serious accusation is that the Public Housing Authority in Washington has clamped a strait jacket on the program through its tightly held control of federal funds.

Sen. John Sparkman (D.-Ala.) says the basic reason for the dropoff is "excessive red tape and harmful effects of centralization." He contends that some local public housing officials have told him they are unable to buy even a broom or soap powder without clearance from Washington.

Since mid-1953 when the present Administration really took over the housing program, construction was undertaken on only about 70,000 of the 170,000 units authorized by Congress. Senator Sparkman and others contend there is a need for still more public housing, but red tape has killed the incentive of local officials to press for more.

The PHA does not deny it carries on an exhaustive review of all phases of the housing program. But it says this is necessary protection against misuse of federal funds and to provide assurance of high standards of performance at the local level.

• Too much work—But PHA officials deny that review has crippled the program. They say the real reason is that local officials are over-burdened by operation of some 435,000 existing projects. Therefore, they cannot press for more now. The result is a standoff; both sides blame each other.

Democrats are backing a bill of Sen. Joseph Clark (D.-Pa.) designed to meet many of the social objections and to return much of the administration to local officials. The House Banking Committee also is scheduled to consider similar measures this week.

Three main provisions are at the heart of the Clark bill:

- Allow more local administration of rents, budgetary controls, money to be spent for social planning, services, recreation and the entire administrative function.
- Require the federal government to help speed retirement of bonds issued to finance construction. This would result in full local control much sooner than is now generally the case.
- Raise the ceiling on family income where private housing is too expensive or inadequate. These families would pay higher rents, part of which would go to purchase of the housing unit by its occupants. In this way it is hoped families would take pride of ownership in their units and help overcome some of the social objections to housing of this type.

Small Price Drop

Repeal of the freight tax will dent materials prices

Contractors can expect only a modest cut in the cost of many materials now that the 3% federal excise tax on freight shipments has been eliminated. The repeal act was signed by President Eisenhower last week and takes effect August 1.

The reduction in rail shipping costs will stick unless railroads ask for, and obtain, higher rates to cover wage increases scheduled for railroad employees November 1. The decision to request rate increases from regulatory agencies has not yet been made, according to officials of two major eastern railroads questioned by ENR.

Contractors buying directly from producers are most certain to gain because freight costs are itemized separately for them. Contractors buying from warehouses or dealers also may get the saving. But since the purchase price that is quoted to them usually conceals freight charges, it is possible that the middlemen may not pass on the reduction.

The sums involved would be small in any case. Here are some cost comparisons on a few typical construction materials:

- Freight charges on a carload of cement hauled by rail from Hudson, N. Y., to New York City will be reduced from $324 to $316. The tax is $8 per carload, or $.02 per bbl.
- Freight charges on steel shipped from Bethlehem, Pa., to New York City now are $168.92 per carload of 40,000 lb. Without the tax, cost will be $164.
- A carload of transite pipe shipped by rail from Manville, N. J., to Boston has a freight charge of $251.32. But after August 1, it will cost $244.
- The federal tax on a 40,000 lb rail shipment of Douglas fir plywood sent from the West Coast to New York totals about $19.

(B&F continued on page 116)

Anti-Recession Bill Pushed

New measure would provide federal loans and grants to strengthen industries in chronic depressed areas

The last of the Democrats' big anti-recession bills has moved a step further toward passage by Congress.

The House Banking Committee has approved the controversial depressed areas bill, by a vote of 17 to 4. The measure provides $275 million in federal loans and grants to help strengthen and enlarge industrial capacity in areas of chronic unemployment.

To qualify, areas must have experienced any one of the following work force conditions.

- 6% unemployed for 18 of the last 24 months.
- 9% for 15 of the last 18 months.
- 12% for the last 12 months.
- 15% for the last six months.

Such areas could secure funds for construction of new factory buildings, repair and modernization of old or unused factories and other buildings or for purchase and development of land and facilities.

Depressed-areas legislation of various types has been kicking around Congress for years. It took the recession this year to give it the push.

• Opposed by Republicans—Considerable opposition is expected from Republicans. GOP congressmen contend the measure is loosely written, and would allow many areas to qualify for funds that do not need them, except to tide them over during temporary setbacks.

Republicans say the measure should be restricted specifically to areas suffering from long-term unemployment resulting from migration of industry, technological changes that have made local industries obsolete or depletion of local resources. They would, however, allow expansion of the industrial base of communities dependent on one industry. They say that as the bill is now written, a city like Detroit, suffering high unemployment because of the depressed automobile market, also could come into the program. They argue that communities like that do not meet the particular aims of an area redevelopment bill.

• Fund distribution—The bill is similar to one passed by the Senate. It would set up a $100 million fund for redevelopment of urban areas and another $100 million fund for rural improvement. In addition, $75 million in direct grants also are provided. The Administration favored a more modest $50 million program.

The bill would establish a new agency to be known as the Area Redevelopment Administration within the Housing and Home Finance Agency. It would be headed by an area redevelopment commissioner.

As outlined in the bill, an over-all program for economic development of affected areas would be prepared and approved by the commissioner and his staff. The agency also could provide technical assistance to the various communities for evaluation of their needs and potentialities for economic growth.

LeTourneau Replies

Denies breaching contract with machinery producer

A breach of contract complaint made by LeTourneau-Westinghouse Co., of Peoria, Ill., against R. G. LeTourneau, Inc., and its president, Robert G. LeTourneau, has been denied by the defendants. Their answer was filed in federal court at Tyler, Tex.

LeTourneau-Westinghouse, wholly-owned subsidiary of Westinghouse Air Brake Co., of Pittsburgh, brought suit to block the immediate re-entry of LeTourneau into the earthmoving equipment business (ENR May 8, p. 24).

When Westinghouse Air Brake bought the earthmoving equipment business from LeTourneau, the latter agreed to remain out of that area of manufacturing for five years. That period ended last April 30. But LeTourneau-Westinghouse, the subsidiary established by Westinghouse Air Brake, says Mr. LeTourneau also agreed not to serve in any capacity for seven years with any person or corporation engaged in the manufacture or sale of earthmoving equipment.

Mr. LeTourneau, in reply, says he intends to remain as chief executive of his firm after it returns to the manufacture of earthmoving machinery. However, he answers that R. G. LeTourneau, Inc., is not an "other person" within the intent and meaning of the agreement.

Both defendants also deny that they manufactured or sold earthmoving equipment between May 1, 1953, and April 30, 1958. Mr. LeTourneau also

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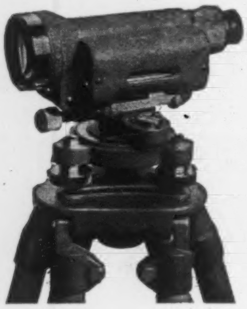

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says that he was available for advice and consultation with LeTourneau-Westinghouse and during the stipulated period, submitted all ideas, drawings and inventions useful in the manufacture of earthmoving equipment. The brief claims that Mr. LeTourneau never was requested by the Peoria company to assign to it inventions, patent applications or patents during the term of his agreement.

ENR Cost Indexes Reach Record Highs in Many Cities

Large wage increases and higher materials prices moved July construction and building costs to an all-time high in many cities, according to ENR's 20 Cities Construction Cost and Building Cost Indexes.

Common labor wage rates now are 7.1% above last year to register the biggest year-to-year increase since 1948-49. The average hourly wage rate stands at $2.463, including fringe benefits. Rates for skilled labor are up 5% from last year. However, July brings an end to the rash of mid-year wage increases. Only three cities expect further construction trade wage boosts before the end of this year.

Lumber prices in July are almost at year-ago levels, while cement prices turn up after a temporary decline.

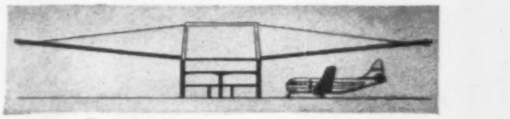
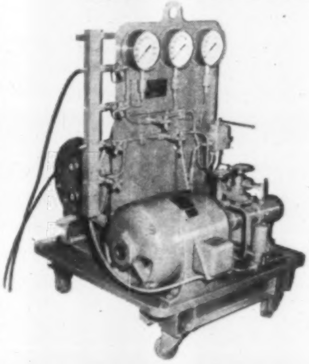
The Construction Cost Index for July is at a record 762.52, a 0.7% boost over the June reading of 757.31 and 5.3% over a year ago. The Building Cost Index, also at an all-time high, is 524.29 in July. This is 0.6% over the June value of 521.09 and 3.5% above last year.

ENR's skilled labor average increases are slightly more than common labor, reversing the trend prevailing earlier this year. The common labor wage average for 20 Cities is 0.9% over June. The average for bricklayers, carpenters, and structural ironworkers in ENR's 20 Cities is up 1.0% in July.

The upward momentum in lumber prices is continuing in July, with strong demand pushing prices closer to levels of a year ago. Southern pine 2x4 prices, while still 1.2% under last year, moved up 0.4% in July. Douglas fir 2x4's are 0.6% above June, but still 1.9% under a year ago. A strike threatening mills in British Columbia could send lumber prices even higher.

Cement prices turn up again in July. Two cities—Detroit and New Orleans—report prices are up an average of 10 cents a barrel in bulk. This reverses an earlier decline due to freight rate reductions, which were passed along from the dealer level to the buyers in some cities.

HYDRAULIC JACKS AND PUMPS FOR ANY PRESTRESS JOB

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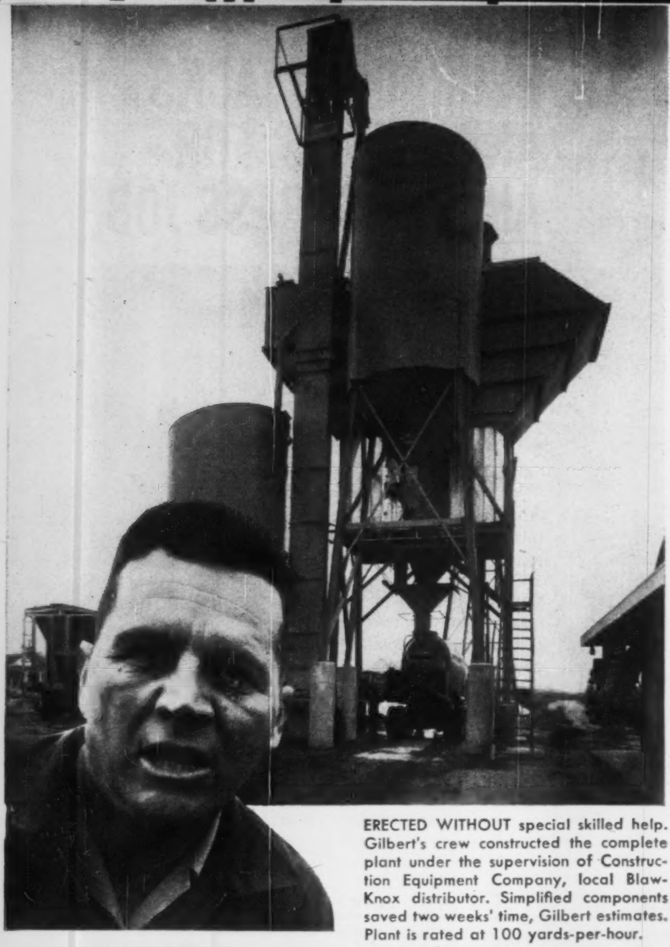

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ERECTED WITHOUT special skilled help. Gilbert's crew constructed the complete plant under the supervision of Construction Equipment Company, local Blaw-Knox distributor. Simplified components saved two weeks' time, Gilbert estimates. Plant is rated at 100 yards-per-hour.

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Labor Bills Are Hanging in Air

The House is sniffing for direction of political winds, while hopes dim for welfare, reform, tax legislation

The Kennedy-Ives labor reform bill passed by the Senate with a lot of fanfare a few weeks ago may be dying a slow and quiet death.

In the weeks ahead, Congressional leaders will be playing the bill by ear. It will become law only if there's enough hue and cry for some kind of antiracketeering legislation this year.

This is the political strategy of House Democratic leaders, and particularly Speaker Sam Rayburn—who has the Senate-passed Labor-Management Reporting and Disclosure Act on his desk. What he does with the measure, approved by an 88-to-1 Senate vote, will determine its fate for 1958.

There are two choices to make:

- He can send the bill on its normal course to the House Labor and Public Welfare Committee. This would almost surely bury it. The committee is so split between conservatives and liberals that it has stalled on dead center when it comes to labor legislation.
- He can bypass the committee, and take the difficult route of sending the reform bill to the House floor. A two-thirds vote would be required to permit the bypass and such a vote would indicate some chance of final approval.

Normally, the powerful House Democrat channels Senate legislation through the proper House committee. The fact that Speaker Rayburn had not done so at ENR press time indicates he still may decide that it's necessary legislation in an election year. By holding on to the bill, there's always a chance such legislation can take the shorter route to passage in the House before August adjournment.

• Bipartisan support—At least one House Labor Committee member has that strategy in mind. Arizona Democrat Stewart Udall says he's trying to get bipartisan support for this approach directly on the House floor. "There's no chance at all for the bill," he says, if it's sent to the Labor Committee.

An object lesson on what happens when labor legislation gets to the House Labor Committee is displayed on the current reform legislation on health and welfare funds. Here, too, the Senate passed a bill requiring disclosure and policing of multi-million-dollar welfare funds—a month before it acted on the Kennedy-Ives labor reform bill.

The welfare bill went its normal route in the House, ending up before a House subcommittee. It now appears to be caught in a good mousetrap. The subcommittee resigned en masse when it took offense at a letter from members of the full committee asking that it speed up the legislation. Now, progress of the legislation is slowed down almost to a halt and possibly doomed.

Even if the Kennedy-Ives bill hits the House floor directly, it could be strangled in debate. Contrary to the tenor of its preamble, a sixth of the bill is devoted to Taft-Hartley Act amendments. Some are quite basic—a federal approach to elimination of the jurisdictional "no-man's land," restoration of voting rights in representation elections to economic strikers, requiring non-communist affidavits from employers, making it easier for construction unions to organize non-union workers through use of a pre-hire contract with a seven-day union shop clause.

And to anyone sensitive to labor legislation, any amendment to the law is a controversial one.

The big question to the Democratic leadership is still whether this is a good year for labor legislation. The clamor for an antiracket measure that arose when the McClellan Racket Committee revelations first developed 18 months ago has died down—and almost out. Despite continuing committee hearings on union corruption, legislators in the House have not sensed that their constituents are demanding reform.

This apathy today, of course, could turn around in the weeks ahead with any new racket revelations from the Senate probers—or as it becomes a political subject with elections coming closer.

• The final version—The leave-it-up-in-the-air approach to the legislation, however, does have strategic value despite the risks involved. It might help to assure a House-passed bill that looks almost like the Senate version by limiting time for extensive debate and change. This would mean a liberal measure that's directed mostly at disclosure and policing of union funds and the activities of union officers.

Because most of the Senate bill deals with labor reform and some new democratic rules for labor unions, organized labor generally approves it. The AFL-CIO wants it passed in the House, with some proposed changes for bargaining purposes, because of its mild approach.

The AFL-CIO building trades, too, like the Senate bill. The monthly bulletin of the Building Trades Department describes the Senate passage as a "victory" and gives a "great deal of credit" to the annual legislative conferences of craft union delegates for the Senate approval.

These conferences have been held for the last four years and are one of the many significant post-war developments in the labor movement that largely account for the form and content of pending labor legislation.

When the Taft-Hartley Act was passed 11 years ago, labor stood low in public favor because of the strong action it took to regain strength after the toll of war. But through the years, labor has proceeded to heal its internal wounds, to work through merger toward common goals, to participate in community services and to engage in political action.

Coupled with labor's recent efforts to improve its moral standards, these add up to an effective public relations program that has helped to win new friends for labor among both public and private citizens. They have also enabled the labor movement to ride out the storm blown up by the McClellan committee.

In short, they've turned a host of anti-labor legislative proposals into the rather mild Kennedy-Ives bill and have kept the Taft-Hartley and anti-trust laws from putting labor in a tighter vise.

• Legislation churns on—While labor reform legislation, however, shifts with the tide, the building trades unions are pressing for other legislative action in the House. They want tax relief for construction workers on projects away from home.

Building Trades President Richard J. Gray and President of the plumbers' union, Peter T. Schoemann testified on the tax matter before the monetary affairs subcommittee of the House Government Operations Committee—urging that the tax deductions be permitted.

There has been a long legal fight over the issue: Whether a construction worker can deduct his travel and living expenses while on a construction project away from home. There is no uniform decision on the matter from the Internal

Revenue Service, though for the most part such tax relief has been denied.

The construction unions put the matter before Congress, while at the same time, it's up before the Supreme Court for solution.

The high court will act, in its 1958-59 term, on the Peurifoy case which involves tax deductions by three building tradesmen who lived in rooming houses near their work project while maintaining homes from 78 to 122 miles from the construction site.

The Internal Revenue Service rejected their tax relief claim; the U. S. Tax Court allowed the deductions. This case is now on the docket for the fall term of the Supreme Court and the pending ruling is likely to delay any legislation on the matter.

ESA Perfects Its Structure

Union says its officers must be professionals, sets up a new national union inside the federation

Engineers and Scientists of America has reiterated its emphasis on professionalism by adopting a constitutional amendment that assures administration of the union by officers and directors who meet an accepted definition of a professional engineer.

The action was taken at ESA's Sixth Annual Convention held last month in New York City.

ESA is a national federation of labor unions representing professional engineers and scientists. It claims a membership of 25,000. Although it originally embraced both professionals and technicians, it has moved toward a membership restricted to professionals and says that goal now has been 99% achieved.

Under the amended constitution, an ESA officer or Executive Board member must meet one of the following qualifications:

- Be licensed as a professional engineer under a state law that meets the criteria endorsed by the engineering societies under the "Model Law" of 1946.
- Have a degree in science or engineering from an accredited college and have been employed as a professional engineer or scientist for at least four years.
- Have been engaged in professional engineering or scientific work as defined by the Taft-Hartley Act for at least eight years.

At the same time, ESA extended the terms of its officers from one to two years and imposed a requirement that each member unit must audit its books and records at least once a year and make the audit report available to its members.

ESA also authorized formation of a national union within the federation. This step was taken to facilitate organizing and to avoid the economic liability of small member units. All new units representing less than 300 employees will be chapters of the National Unit, which will act as bargaining agent for the chapters. When a chapter achieves a dues-paying membership of 1,000, it must apply to ESA for membership as a unit.

Joseph Amann and Albert A. Orth, Jr., were re-elected president and vice president, respectively. Mr. Amann, a former employee of Minneapolis-Honeywell Regulator Co. and a registered professional engineer in the State of Minnesota, has headed ESA since its inception in 1953.

Equality Wanted

NSPE says doctors and lawyers are favored under Wage and Hour Law

A charge of discrimination against professional engineers has been hurled at the U. S. Labor Department by the National Society of Professional Engineers.

The charge relates to the exemption of professional employees from the minimum wage and overtime provisions of the Fair Labor Standards Act, which applies to employees engaged in interstate commerce. NSPE has asked the department without success to show the employed, licensed, professional engineer the same deference it shows doctors and lawyers.

Employees covered by the law must be paid straight-time wages at least equal to the minimum wage and overtime at the rate of time-and-a-half for hours in excess of 40 a week. Professional employees, as defined by the Wage and Hour Administrator, are exempt. One of the tests for exemption is a salary of $75 a week or better. The test is not applied to doctors and lawyers. For nearly 10 years, NSPE has tried to get similar treatment for the licensed engineer.

Here's the essence of NSPE's argument: The licensed engineer is a recognized professional; the salary test is discriminatory and it works against the professional status of engineers because of the law's overtime provisions. For example, a young engineer denied exemption because of the salary requirement is forced to punch a time clock along with production and clerical workers who are paid by the hour.

"It is hard for us to understand," says NSPE, "how the profession of engineering can be recognized, praised, hailed and commended for its contribution to the nation's welfare . . . on the one hand, and made subject of an obvious and unwarranted discrimination . . . on the other hand."

As a result of a hearing held two years ago, the government is about to amend its regulation on professional exemption.

NSPE is opposing a proposal that the weekly salary minimum required for exemption be upped to $90—without excluding licensed engineers.

NSPE argued at the hearing for elimination of the requirement. It said the test of professionalism should turn on duties performed; that engineers should be exempted, along with doctors and lawyers, if the requirement is kept. The hearing officer rejected NSPE's arguments and the society has just filed a rebuttal.

A number of unions, both AFL-CIO and independent, incidentally, have urged that the salary test be raised to $125 minimum. To NSPE, this would compound the discrimination.

Utility Workers Protest Construction by Contract

A municipal decision to have work performed by outside contract instead of by force account has touched off a protest by a local of the International Brotherhood of Electrical Workers and the Los Angeles Civic Center Chapter of Engineers and Architects Association.

Two Los Angeles Department of Water & Power contracts, totaling $410,918, have been awarded for construction of three underground cable ducts at the Scattergood steam electric generating plant in El Segundo.

Some 4,500 department workers, as a result, have demanded the ouster of W & P Commissioner J. A. Thompson.

The workers claim that 50 IBEW workers will have to be laid off temporarily and that the favoring of private contracts, if followed consistently, will threaten the job security of many of the department's 11,000 workers.

Cost of the projects, if done by the department's own crews, would have amounted to $8,500 more than the contract awards.

Iron Workers Out on Strike

Areas in three states affected, settlements with some locals and with other trades run from 12½ to 25 cents

An iron workers' strike in a three-state area, new long-term labor contracts for annual wage boosts of 12½ cents an hour or more, and an uneasy labor peace in parts of Wisconsin wind up another week of the construction industry's collective bargaining negotiations.

Following the expiration of their old labor agreements, more than 1,800 iron workers struck in sections of Delaware, New Jersey and Pennsylvania. The July 1 walkout tied up millions of dollars worth of construction work in Philadelphia, Reading, Harrisburg, Bethlehem, Scranton, Wilmington, Camden and Atlantic City.

Union members, now averaging $4.50 an hour, are asking for a 25 cent hourly wage boost for each of the next two years, plus increased pension benefits.

• **Settlements**—Iron workers in northern New Jersey, settled for a three-year contract that grants a 15 cent wage increase each year, plus 2% for pensions. In Trenton, the union's local 68 accepted 12½ cents each year under a three-year contract that also calls for a 5 cent welfare contribution.

Meanwhile, a bricklayers union local in the Trenton area went on strike for an hourly wage increase of 25 cents.

Elsewhere, a wage package of 42½ cents was accepted by three locals of the painters union in Buffalo, N. Y. The two-year pact, which ends a strike that began June 1, provides for an immediate wage increase of 15 cents, another 5 cents December 1, 10 cents June 1 and 5 cents December 1, 1959. It also calls for 7½ cents in welfare—2½ cents now and 5 cents next June 1.

Progress also has been made toward settlement of a three-week roofers' strike that has cost an estimated $2 million in damages, lost wages and delays in Chicago. The tentative agreement, which will not be disclosed until after ratification, was suggested by a federal mediator. The union had asked for 10 cents in wages and 10 cents in welfare. But the main issue in the dispute centered around working rules that contractors say are restrictive and obsolete.

• **Deadlocks**—A gloomier picture, prevailed last week in Detroit, where a tie-up of major building projects appeared likely as 750 members of the Resilient Floor Decorators, Carpet, Linoleum Tile and Acoustical Workers struck 105 firms for a 15 cent wage increase.

Negotiation deadlocks were plaguing the Milwaukee area, where 19,000 construction workers have been working without contracts.

Principal negotiations are with the Allied Construction Employers Association, which initially asked for a year's wage freeze, but finally countered a 41 cent union demand with an offer of 8 cents an hour.

Contractors are seeking united industry pension and welfare funds, among other things. They say the funds should be consolidated for administration and purchase of insurance.

Glaziers in Milwaukee have settled for a 25 cent wage boost, plus 3 cents an hour for welfare. Workers have accepted a 15 cent wage increase. And boilermakers not involved in the Allied Construction negotiations have signed for 15 cents an hour, effective July 19. That contract covers 4,000 construction boilermakers in the 11-state Missouri River Basin area.

Good Safety Record

Work on St. Lawrence has low accident toll

Dedication of the St. Lawrence Seaway last week (p. 21) marked another milestone in the construction industry's continuing efforts to improve its safety record.

An accident frequency rate of less than the average for the heavy construction industry was achieved during the multi-million-dollar construction work on the Seaway's Snell and Eisenhower Locks and on Long Sault Canal that connects the two.

An "enlightened attitude" on the part of the sponsoring contractors, complete cooperation of labor and "a growing stability" of construction workers are responsible for this achievement, according to Employers Mutuals of Wassau, which insured 90% of the construction work.

Only three fatalities occurred among the nearly 4,000 workers over a two-year period. (At least 100 fatalities could have been expected on a job of this size, safety experts say.) There was an average of 9.0 accidents per million man-hours. The industry average is 19.0.

The moral for other contractors perhaps is this: Safety doesn't just occur by itself. It must be planned; it must be pushed; it must be sold.

Pre-planning of safety measures started months before the Seaway work began. Management, labor and the insurance carrier worked together continuously, and labor participated in every phase of accident prevention.

New workers were given safety indoctrination. Safety messages were displayed on everything—paychecks, equipment, billboards. Use of hard hats and other safety equipment was mandatory. Watchdog safety committees were set up. Periodic progress meetings were held. Safety consciousness took root and prospered.

But is this the full answer? The insurance carrier says "no" and points to what it calls worker "stability." One out of every five workers on the Snell lock, it says, was a college graduate; and use of family-size house trailers enabled many transient workers "to lead normal home lives while on the job."

Sponsoring contractors are Perini Corp., Morrison-Knudsen Co. and Peter Kiewet Co.

Government Alters Policy On Recruiting Engineers

Federal agencies may find it easier from now on to hire "hard-to-find" professional scientific and engineering personnel.

Under a new policy, agencies may recruit for approved positions through employment services operated on a nonprofit basis under the sponsorship of professional societies. An example of such a service is The Engineering Societies Personnel Service, Inc., sponsored by eight engineering societies.

Effect of the change, announced by the U. S. Civil Service Commission (Circular No. 949) is to lift some of the restrictions against use of employment services that charge fees for placement. It is, for example, a basic principle that no employee shall be required to pay a fee to secure federal employment.

Agencies using authorized services, however, must pay any placement fees imposed. Only those with legal authority to use their funds for such purposes can participate in the program.

In certain cases, prior approval of the Civil Service Commission is necessary before referral orders can be placed with authorized employment services. In all cases, similar orders must be placed with the local State Employment Service.

OFFICIAL PROPOSALS

Bids: July 17, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 17th day of July 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Albany & Greene (Rte. 9W)	FARC 58-77	Coxsackie–Ravena Pt. 1 & Pt. 2 S.H. 5198–5370 Ravena Greene County Line, S.H. 5652 Proj. No. DF 365(6)	6.93	Asphalt Concrete	$17,000 Plans $2	$310,000
Greene (Rte. 9W)	FARC 58-75	Catskill–West Coxsackie Pt. 1B & Pt. 2, S.H. 8414–8384 Proj. No. DF 558(7)	9.55	Asphalt Concrete	$17,000 Plans $2	319,000
Saratoga (Rte. 9)	RC 58-69	Various Locations on Saratoga–Glens Falls Pt. 3, S.H. 443	....	Roadside Development	$280 Plans $2	5,000
Schenectady, Warren & Washington (Rtes. 159, 8, 7, 147, 418, 313)	RC 58-83	BR. No. 1 S.H. 163; Br. No. 1 S.H. 880; Br. No. 1 S.H. 1338; Br. No. 1 & Br. No. 2 S.H. 1021; Br. No. 1 S.H. 1023 & Br. No. 1 S.H. 8479.	....	Cleaning & Painting 7 Bridges	$1,300 Plans $2	23,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	MTC 58-1P	New York State Thruway–Mohawk Section Subd. 9. (Thruway Connection to Utica North–South Arterial)	1.21 (0.62 Acc.)	9″ Cem. Conc. Pavt. Var. Wide	$17,000 Plans $2	302,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 38)	FARC 58-87	Port Byron–Conquest, S.H. 8087 Proj. No. DF 66(2)	0.35	9″ Cem. Conc. Pavt. 22′ Wi. Comp. I Beam Br. 92′	$14,000 Plans $2	252,000
Onondaga (Rtes. 5, 11, 298, 31, 48, 174, 370 & 57)	RC 58-88	Various Locations on S.H. 5587, S.H. 8025, S.H. 5470, S.H. 672, S.H. 1039, S.H. 5396, S.H. 132, S.H. 5143, S.H. 5080, S.H. 8496, S.H.9083, S.H. 1040, S.H. 670, and S.H. 5274.	....	Roadside Development	$700 Plans $2 (Prop. Only)	13,000
Onondaga	FIC 58-9 FIRC 58-74	Interstate Route No. 505 (City of Syracuse: Oswego Blvd.); Syracuse Mattydale Fash 54-3 and Phoenix–Syracuse, S.H. 5274 Proj. No. I-1127(4)	2.48 (3.73 Acc.)	Electrical Lighting Facilities	$13,000 Plans $2	226,000
Oswego (Rte. 13)	FARC 58-78	Pulaski–Williamstown Pt. 2, S.H. 972 Proj. No. DF 533(5)	0.67	Asphalt Concrete Ty. 1A	$5,000 Plans $2	91,000
Oswego	FISH 58-26	Interstate Route 505 (Central Square–Parish) Central Square–Constantia, S.H. 1243 C. R. No. 12, 32 and 38. Proj. I-1118(15)	9.01 (4.01 Acc.)	9″ Cem. Conc. Pavt. 2 @ 24′ Var. Wide = 10.50 Mi. Asph. Conc. Ty. 1A = 1.50 Mi. Bit. Stone Surface Treat. = 1.02 Mi. 4 Hy. Seps. Comp. I Beams 221′, 2841′, 250.9′ and 226.5′ 3 R.C. Closed Box Brs. 24′, 26′, and 26′	$340,000 Plans $50 (Full Size)	6,262,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Rte. 33A & 47)	FARC 58-82	Chili Road Pt. 1, S.H. 254; Howard Road, S.H. 9350 Rapids–Rochester, S.H. 401; Proj. No. DU 231(11)	1.19	9″ Cem. Conc. Pavt. 2 @ 24′ Wide = 0.53 Mi. Asph. Conc. = 0.64 Mi.; Misc. Work = 0.02 Mi. Precast Conc. Beam Bridge 30′	$40,000 Plans $3	748,000
DISTRICT No. 5, E. G. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus (Rtes. 39, 17, 62, 16, 18)	RC 58-89	Various Locations on S.H. 1170, S.H. 730, S.H. 1611, S.H. 1657, S.H. 8160, S.H. 1480, S.H. 960, S.H. 1254, S.H. 5607, S.H. 5608, S.H. 8030, S.H. 5265, S.H. 5259A, S.H. 1269, S.H. 1275, S.H. 1568, S.H. 1569 and S.H. 958.	....	Roadside Development	$700 Plans $2 (Prop. Only)	12,000
Erie	FINTC 58-3 FAC 58-10	Interstate Route No. 506 (New York State Thruway–Niagara Sect.) City of Buffalo: Kensington Expy. **Outlet Drain** Proj. No. I-865(17); U 377(14)	4.17	9″ Cem. Conc. Pavt. Var. Width = 1.10 Mi. Asph. Conc. Ty. 2B = 2.30 Mi. Outlet Drain = 0.28 Mi. Misc. Work = 0.49 Mi. 6 Ramp Structures 256′; 568′; 1550′, 968′, 568′, 848′ Viaduct Alterations	300,000 Plans $20	5,643,000
Erie (Rte. 20)	FARC 58-73	Southwestern Boulevard, S.H. 9259 Proj. No. DF 1079(6)	4.12	Asphalt Concrete	$48,000 Plans $2	857,000
Erie & Niagara (Rte. 18)	RC 58-84	Br. No. 4 Lawton–Gowanda, S.H. 525B Br. No. 3 Youngstown–Olcott, Pt. 2, S.H. 8324A	0.11	Cleaning & Painting 2 Bridges	$1,400 Plans $2	26,000
Erie & Niagara (Rtes. 18, 104, 31; 358, 20A)	RC 58-90	Various Locations on S.H. 1754, S.H. 9052, S.H. 617, S.H. 9105, S.H. 1316, S.H. 5417, S.H. 5416, S.H. 5319, S.H. 5431, S.H. 5563, S.H. 1491A, S.H. 1491, S.H. 529, S.H. 5635 and S.H. 86	....	Roadside Development	$1,000 Plans $2 (Prop. Only)	18,000
DISTRICT No. 6, J. H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Chemung	FASS 58-4	Breesport C.R. No. 1 Proj. S 4(2)	0.15	Bit. Mac. Ty. 1 Prestressed Conc. Beam Br. 61.3′	$6,000 Plans $10 (Full Size)	111,000
Chemung & Tioga (Rte. 34)	FARC 58-91	Waverly–Lockwood, S.H. 1078, Lockwood–Van Etten Pts. 1 & 2 S.H. 8224 Proj. DF 995(3); DF-102(3)	7.24	Asph. Conc. Comp. I Beam Br. 169.5′, Prestressed Conc. Br. 44′, Repairs to Two Existing Brs.	110,000 Plans $5	2,107,000
Steuben (Rte. 15)	FARC 58-79	Bath–Avoca, S.H. 5204 Proj. DF-225(12); DF-627(11)	2.28	Asph. Conc. Incl. Repairs to Two Existing Brs.	$20,000 Plans $2	367,000
Schuyler & Steuben (Rte. 226)	FARC 58-76	Savona–Bradford, S.H. 1102 Bradford–Tyrone, S.H. 1420 Proj. S-775(2)	8.79	Asph. Conc. = 0.59 Bit. Mac. Ty. 1 = 8.20 Mi. Comp. I-Beam Br. 45′ Widen. Exist. R.C. Slab Bridge 24′	$75,000 Plans $10	1,375,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rte. 12E)	FARC 58-71	Cape Vincent–Watertown Pt. 2, S.H. 1164 Proj. DF-565(4)	4.62	Asph. Conc. Ty. 1A = 4.56 Mi. Misc. Work = 0.06 Mile	$43,000 Plans $3	780,000
St. Lawrence (Rte. 37C)	FARC 58-72	Massena–Helena Pt. 2, S.H. 1265 Proj. DS-367(3)	2.40	Asph. Conc. Ty. 1A	$19,000 Plans $3	340,000
St. Lawrence (Rte. 11 & 87)	PSC 8143	Elimination of Grade Crossing of the New York Central Railroad with Richville–DeKalb Junction Pts. 1 & 2 S.H. 8476–9236 (Bairds Crossing)	0.72 (0.17 Acc.)	Asph. Conc. Ty. 1A Hy.-RR Sep. Comp. I-Beam 251′.	$34,000 Plans $3	629,000
St. Lawrence (Rte. 68)	FARC 58-85	Canton–Pierrepont, S.H. 1126 Proj. No. DS-435(1)	1.10	Bit. Mac. Double Surf. Treat. = 1.00 Misc. Work = 0.10 2 R.C. Slab Bridges 30′ and 30′ 1 I-Beam Bridge 48.2′	$29,000 Plans $3	523,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia (Rte. 23)	FARC 58-81	Hollowville–Craryville, S.H. 763; Craryville–State Line, S.H. 762 Proj. No. DF-564(7)	4.34	Asph. Concrete 4 R.C. Closed Box Brs. 25.1′, 47.4′; 38.2′ and 21′	$40,000 Plans $3	685,000
Dutchess (Rte. 44)	FARC 58-49	Pleasant Valley–Washington Hollow, S.H. 748 Washington Hollow-Millbrook, S.H. 609 Proj. DF-633(3)	3.70	Asph. Concrete	$22,000 Plans $2	398,000
Putnam (Rte. 6)	FARC 58-80	Brewster–Carmel, S.H. 909 Proj. DF-590(4)	0.56	9″ Cem. Conc. Pavt. 24′ Wide Repairs to Exist R. R. Gr. Sep. Struct.	$11,000 Plans $2	200,000
DISTRICT No. 9, J. C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 30)	FARC 58-86	Margaretville-Halcottsville, S.H. 5384 Proj. No. DS-459(2)	0.46	Asph. Conc. Ty. 1A Comp. I-Beam Br. 84′	$14,000 Plans $15 (Full Size)	234,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	FAC 58-11	Glen Cove Arterial, Cont. 2 (Long Island Railroad to Pratt Boulevard) Proj. No. U-1102(2)	0.59	9″ Cem. Conc. Pavt. 2 @ 25′ Wide =0.53 mile Misc. Work=0.06 mile Hy. Sep. Weld. Plate Girder 175′	$74,000 Plans $5	1,344,000
Queens	FICE 58-1	Int. Rte. Conn. 513 Clearview Expressway (Cont. 1D) Proj. No. I-1112(6)	3.05	Demolition of Buildings	$15,000 Plans $2	266,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from opposite page)

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: August 14, 1958

Notice to Bidders
Rahway Valley Sewerage Authority Union & Middlesex Counties, New Jersey

OUTFALL SEWER

Contract No. 5—Outfall Sewer—Section "B"

Sealed proposals for Contract No. 5 involving construction of Section "B" of the Outfall Sewer for the Rahway Valley Sewerage Authority will be received at the meeting place of said Authority, the Westfield Municipal Building, Westfield, New Jersey, until eight o'clock P. M. (8:00 P. M.) Prevailing Time on Thursday, August 14, 1958, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, terms of the proposed contract, and form of bond on file with the Authority.

Contract No. 5, Outfall Sewer, Section "B", involves the construction of approximately 13,500 feet of 66-inch outfall sewer, complete with all appurtenances.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Rahway Valley Sewerage Authority for an amount not less than ten (10) per cent of the amount of the base bid. Bidders shall enclose as part of their sealed proposal a statement of commitment by a corporate surety company authorized to do business in New Jersey that such company will underwrite and issue to the Rahway Valley Sewerage Authority a performance bond in statutory form in behalf of the contractor.

Bidders are notified that they will be required to furnish a standard form of questionnaire and financial statement containing a complete statement of the bidder's ability, financial standing and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications. The Authority, through its Engineers, may refuse to furnish such bidder whose statement is unsatisfactory, with plans and specifications.

The Rahway Valley Sewerage Authority reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests.

Plans and specifications may be seen at the Authority sewage treatment plant, East Hazelwood Avenue, Rahway, New Jersey. They may be obtained at the Office of the Consulting Engineer, Elson T. Killam Associates, Inc., 48 Essex Street, Millburn, N. J. upon payment of $15 for each set. The deposit will be returned only to Contractors submitting bona fide proposals who return the plans and specifications in good condition within ten (10) days after opening of bids.

By Order of the Rahway Valley
Sewerage Authority
W. Edward Richards,
Secretary-Treasurer

Contr. #5 R

Bids: July 17, 1958.

Erie Canal, Contract M58-8

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M. DST on July 17, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 58-8 for Cleaning and Painting Guard Gates over the Erie Canal in Herkimer and Oneida Counties, New York Engineer's Estimate for M 58-8 is $42,000.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps, and specifications for Contract M 58-8 may be examined and obtained at the office of Mr. Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica, New York.

The deposit for Plans and Proposal Forms for Contract M 58-8 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 58-8 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $2,200.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders in the contract specifications.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Prequalification Date: July 18, 1958

Board of Education Bureau of Construction

NOTICE RE: PREQUALIFICATION FORMS OF CONTRACTORS

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures for the new Public School 180, Manhattan, West 119th Street and Morningside Avenue.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification application by contractors will expire on Friday, July 18, 1958.

City Record—Tuesday, July 8, 1958

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction
Dated: July 1, 1958

Bids: July 22, 1958

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
15 kv METALCLAD SWITCHGEAR AND APPURTENANCES
FOR NIAGARA SWITCHYARD
SPECIFICATIONS NO. PA-N-25022
NIAGARA CONTRACT NO. NP19

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Niagara Switchyard Area,

University Siding, Niagara Falls, New York, of 15 kv metalclad switchgear and appurtenances for the Niagara Power Project in Lewiston, Niagara County, New York, until 11:30 A.M. Eastern Daylight Saving Time on the 22nd day of July, 1958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for the 15 kv metalclad switchgear, associated equipment and services in accordance with the bidding schedule.

Delivery of the 15 kv metalclad switchgear and appurtenances will be required on or before November 1, 1959.

Plans, Specifications and Proposal Forms fo rthe work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 9, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Construction of Tuscarora Power Plant in Lewiston
Niagara County, New York
Specifications No. PA-N-23007
Niagara Contract No. N10

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Tuscarora Power Plant located in Lewiston, Niagara County, New York on September 9, 1958 at 10:30 A.M., E.D.S.T., at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are as follows:

2,715,000	cu. yds.	Excavation, unclassified
28,500	lin. ft.	Drill holes for explora- and grouting
583,800	cu. yds.	Concrete
35,000,000	lbs.	Reinforcing steel
1,283,000	lbs.	Miscellaneous metalwork
1,049,000	lbs.	Erection of structural steel
6,880,000	lbs.	Erection of gates, gate and stop log guides

The work shall be completed on or before December 31, 1962.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set of contract documents, and Twenty-Five ($25.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid of any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

OFFICIAL PROPOSALS

Bids: August 12, 1958.

Project U-26-1 (7) North Expressway State Road No. 26 (Villamil Street to Intersection No. 5 Section) Municipality of San Juan, Puerto Rico

COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF PUBLIC WORKS
BUREAU OF HIGHWAYS
ADVERTISEMENT
July 6, 1958

The Board of Awards of the Department of Public Works of Puerto Rico, 1507 Ponce de León Avenue, Santurce, Puerto Rico, will receive sealed proposals for the construction of Project U-26-1 (7) NORTH EXPRESSWAY State Road No. 26, Municipality of San Juan, Puerto Rico.

Bidders shall submit their proposals at the office of the Board of Awards, 1507 Ponce de León Avenue, Santurce, Puerto Rico, until 2:00 P. M. (Puerto Rico time) on August 12, 1958, at which time and place said proposals will be publicly opened and read aloud.

The work to be performed is divided into two (2) parts.

Part I—Dry or Hydraulic Fill. Construction of an embankment with dry or hydraulic fill 0.695 Miles long and drainage structures.

Principal items for the dry fill are 134,725 cubic meters excavation of unsuitable material, and 328,970 cubic meters dry fill of which 128,000 CuM will be extra compacted.

Principal items for the hydraulic fill (Alternate for Dry Fill) are 387,900 cubic meters excavation of unsuitable material and 368,290 cubic meters of hydraulic fill.

Part II—Grading and drainage, approximate length 0.366 miles. Paving, 1.061 miles, of four lane divided expressway with frontage roads, including also the construction of an 18,00M reinforced concrete wharf, a 31.00M continuous reinforced concrete overpass and highway lighting.

Plans, specifications, instructions to bidders, and all necessary information may be obtained from the office of the Procurement and Contract Division, Department of Public Works, 1507 Ponce de León Avenue, Santurce, Puerto Rico, upon a deposit of EIGHTY ($80.00) DOLLARS in cash, money order or certified check payable to the Secretary of the Treasury of Puerto Rico until 96 hours prior to the opening of bids. The full amount of the deposit will be refunded to each depositor upon the return of the plans in good condition within twenty (20) days after the opening of bids.

Each proposal must be accompanied by a provisional bond in the amount set forth below in any of the forms indicated in the General Conditions.

Part I—Fifty thousand ($50,000.00) Dollars

Part II—Forty thousand ($40,000.00) Dollars

The Board of Awards reserves the right to accept any bid or to reject any or all bids and to award contract under the conditions found most favorable to the Commonwealth of Puerto Rico.

Roberto Sánchez Vilella
Secretary of Public Works

Bids: August 14, 1958

Notice to Bidders Rahway Valley Sewerage Authority Union & Middlesex Counties, New Jersey

OUTFALL SEWER

Contract No. 4—Outfall Sewer—Section "A"

Sealed proposals for Contract No. 4 involving construction of Section "A" of the Outfall Sewer for the Rahway Valley Sewerage Authority will be received at the meeting place of said Authority, the Westfield Municipal Building, Westfield, New Jersey, until eight o'clock P.M. (8:00 P.M.) Prevailing Time on Thursday, August 14, 1958, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, terms of the proposed contract, and form of bond on file with the Authority.

Contract No. 4, Outfall Sewer, Section "A", involves the construction of approximately 2700 feet of 66-inch outfall sewer, complete with all appurtenances.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Rahway Valley Sewerage Authority for an amount not less than ten (10) per cent of the amount of the base bid.

Bidders shall enclose as part of their sealed proposal a statement of commitment by a corporate surety company authorized to do business in New Jersey that such company will underwrite and issue to the Rahway Valley Sewerage Authority a performance bond in statutory form in behalf of the contractor.

Bidders are notified that they will be required to furnish a standard form of questionnaire and financial statement containing a complete statement of the bidder's ability, financial standing and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications. The Authority, through its Engineers, may refuse to furnish such bidder whose statement is unsatisfactory, with plans and specifications. A minimum period of two weeks should be allowed for review and approval of qualification before plans are issued.

The Rahway Valley Sewerage Authority reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests.

Plans and specifications may be seen at the Authority sewage treatment plant, East Hazelwood Ave., Rahway, N. J. They may be obtained at the Office of the Consulting Engineer, Elson T. Killam Associates, Inc., 48 Essex St., Millburn, N. J., upon payment of $15.00 for each set. The deposit will be returned only to Contractors submitting bona fide proposals who return the plans and specifications in good condition within (10) days after the opening of bids.

By Order of the Rahway Valley
Sewerage Authority
W. Edward Richards, Secretary-Treasurer

Bids: August 15, 1958

Request for Bids For Construction of Railroad Bridge

Sealed proposals will be received at the office of Wm. J. Hedley, Chief Engineer, Wabash Railroad Company, Railway Exchange Building, St. Louis 1, Missouri, until 12 Noon (C.S.T.) on the 5th day of August, 1958, for constructing the substructure and superstructure of a double track railroad bridge, 520 feet long, over the Calumet Sag Channel near Palos Park, Illinois. Plans, specifications and other information concerning this project can be obtained from the office of the Chief Engineer, Wabash Railroad Company, 1402 Railway Exchange Building, St. Louis 1, Missouri, upon payment of $10.00 per set.

Bids: August 7, 1958

Project F-2-4 (6) Aguadilla By Pass Municipality of Aguadilla, P. R.

COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF PUBLIC WORKS
BUREAU OF HIGHWAYS
ADVERTISEMENT
July 6, 1958

The Board of Awards of the Department of Public Works of Puerto Rico, 1507 Ponce de León Avenue, Santurce, Puerto Rico, will receive sealed proposals for the construction of 6.027 Kms. of Project F-2-4 (6) AGUADILLA BY PASS State Road No. 2, Municipality of Aguadilla, Puerto Rico.

Bidders shall submit their proposals at the office of the Board of Awards, 1507 Ponce de León Avenue, Santurce, Puerto Rico until 2:00 P. M. (Puerto Rico time) on August 7, 1958 at which time and place said proposals will be publicly opened and read aloud.

Principal items are 872,800 CuM unclassified excavation; 172,800 CuM selected borrow material; 35,100 CuM caliche base course; 65,000 SqM concrete pavement and 7,900 Tons dense graded hot plant mix, Class F, Type F-1, and two continuous reinforced concrete overpasses, over all length 0.050 miles.

Plans, specifications, instructions to bidders, and all necessary information may be obtained from the office of the Procurement and Contract Division, Department of Public Works, 1507 Ponce de Leon Avenue, Santurce, Puerto Rico upon a deposit of ONE HUNDRED ($100.00) DOLLARS in cash, money order or certified check payable to the Secretary of the Treasury of Puerto Rico until 96 hours prior to the opening of bids. The full amount of the deposit will be refunded to each depositor upon the return of the plans in good condition within (20) days after the opening of the bids.

Each proposal must be accompanied by a provisional bond in the amount of ONE HUNDRED FIFTY THOUSANDS ($150,000.00) DOLLARS in any of the terms indicated in the General Conditions.

The Board of Awards reserves the right to accept or reject any or all bids and to award contract under the conditions found most favorable to the Commonwealth of Puerto Rico.

Roberto Sanchez Vilella
Secretary of Public Works

Bids: July 22, 1958.

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
115 kv AND 230 kv
POWER CIRCUIT BREAKERS
FOR
NIAGARA SWITCHYARD
SPECIFICATIONS NO. PA-N-25016
NIAGARA CONTRACT NO. NP20

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of 115 kv and 230 kv power circuit breakers for the Niagara Switchyard in Lewiston, Niagara County, New York until 10:30 A.M. Eastern Daylight Saving Time on the 22nd day of July 1958, at the Authority's Office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 58, 34, or 24, power circuit breakers and associated equipment in accordance with the bidding schedules.

Delivery of the power circuit breakers will be required beginning on or before August 1, 1959.

Plans, Specifications, and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications, and Proposals Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

Department of Commerce, Civil Aeronautics Administration. Sealed bids (Invitation No. 9-3034-B1) will be received at Washington, D. C., until 2:00 P. M., July 15, 1958, for clearing, grubbing and demolition in preparation for development of the Washington International Airport in Fairfax and Loudoun Counties, Virginia; approximately 3,900 acres to be fully cleared, including approximately 1,275 wooded acres, within 90 days after Notice to Proceed; partial clearance of approximately 4,300 acres within 150 days after Notice to Proceed; includes removal of approximately 550 buildings, including dwellings, barns, silos, all fences and other types of structures, installations and improvements. For particulars, address Procurement Division, W-160, Civil Aeronautics Administration, T-5 Building, Room 2615, Washington 25, D. C.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5076) will be received at Helena, Montana until August 5, 1958, for furnishing labor and materials for earthwork and structures for completion of Spokane Bench Laterals, Montana, Missouri River Basin Project. Location near Helena, Montana. Principal items are 82,300 cu. yds. excavation; 585 cu. yds. concrete; furnishing and laying 3,755 feet of 18" to 36" standard strength concrete culvert pipe; and other work. Completion time 220 and 450 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: July 17, 1958

New York State Contract M58-11

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M. DST on July 17, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 58-11 for Cleaning and Painting Three Canal Bridges in Monroe County and the Modina Guard Gate, Orleans County, N. Y.

Engineer's Estimate for M 58-11 is $12,300.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York .
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 58-11 may be examined and obtained at the office of Mr. B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, New York.

The deposit for Plans and Proposal Forms for Contract M 58-11 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 58-11 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $700.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: July 16, 1958

Interceptor Sewer Construction

June 19, 1958

Sealed proposals will be received by the Board of Contract and Supply at its offices, Municipal Bldg., Binghamton, New York, until 10:30 A.M. Wednesday, July 16, 1958 (EDST) for:

Interceptor Sewer Construction, Contract 11A.

The Contract documents, drawings and specifications may be examined in the office of the City Engineer, City Hall, Binghamton, N. Y. Copies thereof may be obtained from the Dept. of Purchase, 3rd Floor, City Hall, upon payment of a $35.00 deposit. Checks may be made payable to John E. Bloomer, Comptroller. Upon the return of said documents in good condition, within thirty days following the award of this contract, the full $35.00 deposit will be refunded to bidders and $25.00 of the deposit will be refunded to each non bidder.

These proposals must be sealed and marked on the outside to indicate the contents and each shall be accompanied by a Certified Check, bid bond, or New York Draft to the order of John E. Bloomer, Comptroller, or cash in the sum of five per cent (5%) of the total amount of the proposal, which amount will be held by the City without interest as a guarantee that the party or parties whose bid is accepted will enter into a contract and furnish a bond with surety satisfactory to the Mayor in the sum of fifty per cent (50%) of the amount of the contract. .This bond must be bought from a local agent.

The Board of Contract and Supply reserves the right to reject any or all bids.

WILLIAM G. EMMONS, Sec'y
Board of Contract & Supply

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

EMPLOYMENT OPPORTUNITIES

(Continued on the following page)

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Concrete Superintendent, sober, capable of building highway and railroad culverts, spillways, small dam structures. Location, Midwest, with established contractor. Please furnish complete qualification resume. P-8240, Engineering News-Record.

Bridge Superintendent, experienced in building highway and railroad bridges. Location, Midwest. Salary open as to qualifications. Give full details covering experience, references and personal data. P-8241, Engineering News-Record.

Construction Executive. Nationally known construction company seeks topnotch young executives. Opportunities for management of entire division of construction company. Prefers some experience in business management. Individual must be capable of estimating and supervising in fields of highway, heavy and tunnel construction. However, not necessary that his present responsibilities be commensurate with responsibilities of position offered. Ability and youth will be given significant consideration. Both foreign and domestic work. Salary open. Please submit complete personal information and resume of experience. All replies will be held confidential. P-8238, Engineering News-Record.

Contractor's Engineer, with several years field experience with general contractor on building construction, for well established, dynamic, growing general contractor. College graduate preferred. Above average opportunity for advancement in young-minded organization. This man will be located permanently at our Home Office. Please send resume and identification photo. P-8322, Engineering News-Record.

Design Engineers: Graduate Civil Engineers to do detailed design work involving street paving, storm sewer and sanitary sewer projects. Sanitary Sewer projects to be given major emphasis. Application should be made, giving minimum salary, to Department of Personnel, Springfield, Missouri.

Hydraulic Engineers—Civil Engineer Graduates— All grades, experienced in hydraulic design of channels and bridges and/or design and construction of dams, for regulatory agency. Duties include review of plans and specifications, report writing, field investigations and inspections, with some travel and public relations. Salary depending on experience. Location—Harrisburg, Pennsylvania. P-8403 Engineering News-Record.

Sanitary Engineer with experience in design and specification writing for sewage treatment plants. Submit brief resume of qualifications to Gardner and Sterling, Consulting Engineers, P.O. Box 74, Salisbury, Maryland.

When
Answering
BOX NUMBERS...

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

• *POSITIONS VACANT*

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Constr. Co., Inc., P.O. Box 1679, Wichita, Kansas.

Superintendent, Incineration Plants, Vicinity of Chester, Pennsylvania. Salary $10,000 to $12,000 per annum. To act as Superintendent and Manager of three incineration plants with a capacity of 600 tons each. Graduate mechanical engineer with several years of administrative and construction experience preferred. Would act temporarily in capacity of resident engineer while plants are under construction. Approximately 35 to 50 years of age; good physical condition. Send full statement of training, experience, and availability to Clarence L. Connor, Administrator, Delaware County Disposal Department, Court House Annex, Media, Pennsylvania.

Technical Service Engineer. Civil Engineer for technical field work with customers of major cement producer. Age 24-30. Salary open, expenses, company car. Forward resume. P-8112, Engineering News-Record.

Wanted: Engineer for Highway Survey and Plans Work on County F.A.S. and Township M.F.T. Projects. Degree or similar experience required. Please give education, experience and salary required. Reply to—Adams County Superintendent of Highways, 3535 Broadway, Quincy, Illinois.

Wanted Construction Superintendent for heavy steel bridge work. Must be experienced in planning, equipping and erecting jobs in the 1000 to 5000 ton bracket including moveable bridges. Send complete resume including salary desired. All replies held confidential. P-8361, Engineering News-Record.

(Continued on the following page)

CIVIL ENGINEERS

Vacancy due to a promotion in Madison, Wis. Graduate engineer with some experience to begin in Engineering Dept. at about $455 a month, **unless** special arrangements can be made for a higher entrance salary due to qualifications. Annual and longevity increases to $572. Office and field work in design and construction of sewer, water, street, sidewalk and curbs. Possession of Engineer-in-Training Certificate required. No residence restrictions for U. S. citizen to begin work. Wisconsin Retirement Fund and Social Security benefits. Personnel Dept., 404 City-County Bldg., Madison 9, Wis.

ASSISTANT TO GENERAL SALES MANAGER

Top flight man capable of assuming duties of General Sales Manager. Must have earned $12,000.00 or more. Headquarters in New York City. Fabricated steel products sold to industry. Excellent opportunity in well established firm doing national business on production items. Established prices, complete catalogs and advertising program.

P-8393, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL STEEL DETAILERS AND CHECKERS WANTED

Pay above average, vacation with pay, steady work, modern air-conditioned offices.
Company est. 33 years. Send detailed information.

THE MARYLAND STEEL PRODUCTS CO.
P. O. Box 1997
Baltimore 3, Maryland

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

Send NEW Ads and Inquiries to Classified Advertising Division
of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.
July 24th issue closes July 14th

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

The Commonwealth of Pennsylvania Seeks

BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of bridge experience.

Expanding operations offer permanent positions for

- **JUNIOR DESIGNERS**
- **DESIGNERS**
- **ASSISTANT SQUAD LEADERS**

Salaries from $5500 to $8200 per year.

Plus Liberal Fringe Benefits

Send Complete resume to

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

ESTIMATOR

We are looking for a young recent civil or architectural college graduate for a position in our Estimating Department. Excellent opportunity for advancement in the field of building construction with an established, expanding general contractor. Previous experience desirable, but not necessary. Write complete personal and experience detail.

BLOUNT BROTHERS
CONSTRUCTION COMPANY
P. O. Box 949 Montgomery, Alabama

MUNICIPAL ENGINEERING

Graduate Civil Engineer for city of 36,000. $457 to $575 per month. Starting rate commensurate with experience.

Two years engineering college or equivalent experience. $399 to $500 per month. Starting rate commensurate with training and experience.

Both positions under Civil Service with liberal Life and Health Insurance program and retirement system.

Apply to:

A. F. HULTENG
Director of Public Service
P. O. Box 900, Grand Forks, North Dakota

FIELD ENGINEERS, ESTIMATORS IMMEDIATE EMPLOYMENT

Northern New York construction firm offers long range opportunities to civil engineers to age 40 with experience in building construction for positions in estimating or field layout work.

JOHN W. ROUSE CONSTRUCTION CORP.
8 CHURCH ST., GOUVERNEUR, NEW YORK

ESTIMATOR-ENGINEER

Established heavy construction contractor desires ambitious young civil engineer for Chicago office. Salary and future commensurate with ability. Furnish resume with application.

P-8299, Engineering News-Record
520 N. Michigan Avenue, Chicago 11,
Illinois

ENGINEER $7-8,000

Experienced restaurant & cafeteria construction. layout, equipment, installation & air-conditioning Permanent position with large chain restaurant company. Write giving full particulars-experience, education. All replies confidential. Box EN 874, 125 W 41 St., N. Y. 36.

OVERSEAS

An exclusive association for foreign construction workers. Learn the advantages of membership. Write for free descriptive details. Overseas Americans, Inc., 7 West 44 St., New York 36, N. Y. Dept. M.

• *POSITIONS VACANT*

(Continued from preceding page)

Engineer for Sales and Estimating work, must be Civil Graduate or equivalent, some travel over limited area, Northeastern States location. Give full details to P-8351, Engineering News-Record.

Wanted: Experienced concrete paving superintendent for contractor working predominantly in the Texas area. P-8395, Engineering News-Record.

Wanted: Young graduate Engineer, preferably single, interested in overseas assignment with Consulting firm. State education, background and experience. Reply fully to P-8394, Engineering News-Record.

• *EMPLOYMENT SERVICE*

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 47 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars, R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• *POSITIONS WANTED*

Civil-Sanitary Engineer-35-BSCE-MSSE-PE-Spanish descent, now employed, desires to represent Firm or Firms manufacturing Sanitary Engineering equipment which desire sales and/or engineering consultant services for their equipment in the Caribbean and/or Latin America. PW-8243, Engineering News-Record.

Pressure Grouting Engineer; Superintendent. Seven years with international firm on world-famous operations plus equipment, technique improvements. Versatile, original. Best references. Go anywhere. PW-8219, Engineering News-Record.

Experienced Estimator, Project Mgr. and Construction Engineer, Registered Graduate Civil Engineer, Age 35, Available Now! PW-8225, Engineering News-Record.

Structural Engineer, Registered, 30 years design, construction, specifications, subways, waterfronts, power plants, industrial, office buildings. PW-8276, Engineering News-Record.

Vice President and General Manager, medium size general contracting firm; Reg. Eng., Bach. Degree Civil Eng., Master's Degree Bus. Adm.; 10 years experience one firm as Field Engineer, Sup't, Estimator and Project Manager, and Partner. Age 35, married, 3 children, Scandinavian. Top references. Competitive and Cost Conscious. Desires aggressive position in expanding firm. PW-8261, Engineering News-Record.

Construction Manager, age 46. Wide experience in general contracting field as superintendent, general superintendent, presently employed, desire change. PW-8321, Engineering News-Record.

• *POSITIONS WANTED*

Concrete Inspector, Canadian, immigrating U.S. early August. 30 years of age, 10 years experience in hydro-electric and heavy industrial concrete inspection. Member A.C.I. and A.S.T.M. Excel reputation, excel references. Thorough experience in all phases of control and construction. PW-8222, Engineering News-Record.

Construction Superintendent or manager qualified, 25 yrs. experience. G.M.C. Lucas, 2225 Wisteria, Sarasota, Fla. RI 79843.

Chief Estimator—Bachelor of Civil Engineering Masters—Business Administration, Professional Engineers Licenses—New York and New Jersey, 35, complete Estimating and Cost Control functions, preparation of bids, getting and letting sub-contracts. Industrial, Chemical, Refinery. Presently Chief Estimator with world wide Engineering and Construction Company. PW-8338, Engineering News-Record.

Contractor's Engineer—graduate C.E. licensed. Heavy Construction, Missile Projects, Building. Wide experience in Estimating, Purchasing, Cost Keeping, & negotiations of contracts & extra work, Field Supervision & Project Management. Thorough knowledge & experience in the successful preparation & processing of construction claims on Government & State work. Presently employed by contractor in N. J. & Phila. areas. Available within 2 weeks notice. Willing to prove ability before definite commitment. PW-8349, Engineering News-Record.

Highway Engineer, Grad. C.E., Reg.; 12 yrs. with state; design & const; in charge state earthwork dept. one year; master, earthwork, grade balancing, O.H., and the mass diagram; seven yrs. design squad leader; top personnel relations; AAA-1 references. Available immediately for interview. PW-8365, Engineering News-Record.

Need A Trouble Shooter? General Superintendent experienced in difficult jobs-bridges-power plants-sewage plants-irrigation works-drydocks-all types foundations and cofferdams-seeks challenging opportunity leading to management responsibility. Registered CE—Now employed. PW-8356, Engineering News-Record.

Management Executive 18 years successful project installations and supervision Latin America and Far East organizing and reorganizing multi-million dollar operations. Co-ordination Govt. and private Contracts—finances—accounting—audits — personnel — purchasing — transportation. Fluent Spanish and Portuguese. Available Aug. 15. Will relocate. PW-8391, Engineering News-Record.

Sanitary Engineer—25, B.S., will receive M.S. in August 1958, military obligation completed, desires position with consulting firm, East Coast. PW-8392, Engineering News-Record.

DON'T FORGET THE
BOX NUMBER

SEARCHLIGHT

BUSINESS OPPORTUNITIES

EQUIPMENT - USED or RESALE

UNDISPLAYED RATE:

$2.40 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS $2.40 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

CLASSIFIED ADVERTISING

Send new ads and Inquiries to Classified Advertising Division of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. July 24th issue closes July 14th.

SECTION

DISPLAYED RATE:

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches—to a page.

M-R-S Model 200

NEW—UNUSED

Buffalo-Springfield

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USED 1 MONTH

Extremely low prices

MONTAG & SONS

7805 NE Halsey St.
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LOCK COIL CABLE

1—1600′ reel 3½″ Lock Coil Cable

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Price/ft. f.o.b. So. San Francisco, California.............. $2.00

Sockets and Steel Cable Reels also available

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10 West Orange Avenue So. San Francisco, California
Phone: PLaza 6-0300 — Hughes

FOR SALE

Surplus Used Crane-Drag Booms available for all make machines at Bargain Prices. Swivel type Pile Driving Leads.

AIR COMPRESSOR RENTAL CO., INC.
19615 Nottingham Rd. Cleveland 10, Ohio

WANTED

DIESEL TRUCKS

Pickup or Stake Body

Please state price, condition, and location

BLAKE CONSTRUCTION CO., INC.
P. O. Box 7806 Washington, D. C.
EXecutive 3-4430

WANTED

15 TON CABLEWAY CARRIAGE

Please state price, condition, and location

HARDAWAY CONTRACTING COMPANY
P. O. Box 1360 Columbus, Georgia

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
Satsuma, Florida

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• CONTRACT WORK WANTED

Licensed Surveying personnel, or crews available on contract basis, any location. CWW-8339, Engineering News-Record.

• FOR RENT

51 Broadway—6,600 square feet, sublease Executive offices and staff areas. Immediate occupancy and attractive terms. Telephone W. S. Brayshaw of occupying firm. BEekman 3-6300 in New York.

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. [illegible] Forty-third year. [illegible]

WILSON *Engineering Corp.*

College House Offices HARVARD SQ. CAMBRIDGE, MASS.

TO HELP YOU

Sell Equipment You No Longer Need

Use

"Searchlight" Advertising

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Various Makes

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Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

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210 S. Canal St. Chicago (6), Ill.

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New or Rebuilt

Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 87.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSIT & LEVEL REPAIR SERVICE

Highly skilled service on all makes in our own modern shop.

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Fully reconditioned and guaranteed.

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ESTABLISHED 1890
1336 Cherry St. • Philadelphia 7, Pa.

ALL MAKES

RE-BUILT
REPAIRS
RENT
REAL EXPERTS

BUFF

69 Dey St., New York WOrth 2-2797

ALL SIZES
NEW • USED

HY DRACHMAN STEEL CORP.

STRUCTURAL STEEL

IMMEDIATE
DELIVERY
FROM STOCK

SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

The Contractors Steel Supply House
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SURPLUS NEW and USED **For Sale, Wanted or Rent**

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Other Lengths & Sections at Various Locations, including Storage Yards at CHICAGO & BUFFALO

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Steam Pile Hammers and Extractors
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1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

"FASTER FROM FOSTER"

STEEL SHEET **PILING**

H-Bearing Pile - Pipe Pile - Rail Pile
From our regular stocks

L. B. FOSTER co.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
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500 pcs. MP 116, MP 115 20′ to 60′
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SEABOARD STEEL CORPORATION
Tel: RIngling 7-0461, 4521 So Tamiami Tr.,
Sarasota, Florida

H & STEEL SHEET PILING

3700 PCS. BETH. SP6, A65′ 50′ 56′ & 48′ & 40′
264 PCS. MP112—40′ & 60′
447 PCS. BETH.—AP3—25 & 30, 40 & 60 FT.
416 PCS. BETH.—DP2—31′ 40′ 50′ & 64′
536 PCS. BETH. ZP32—25′ 36′ 48′ 55′ & 62′
1500 PCS. BP112—BP114—55′-60′
112 PCS. 8′, 300 PCS. 15′ Corrugated

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STOCKS: N. Y.—BOSTON—BUFFALO
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INGER, RAND AIR COMPRESSORS
1—3876FT. 700 H.P. & 2—3078FT. 500 HP. PRE2
1—1578FT. 250 HP. XVH, 2 1055FT. 175 HP XRE2. 4—723′ Joy WN102

4—GANTRY WHIRLEY CRANES
25 R-Amer. 75′ Gantry 165′ Boom
20 R-Amer. 60′ Gantry 139′ Boom

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone Mu 2-3075

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Location	Location
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225	MP-115	50 to 60 ft.	Chicago
150	MP-112	50 to 60 ft.	Chicago
84	MP-116	60 to 65 ft.	Kansas City
174	MP-101	34 to 35 ft.	Nebraska
114	MP-116	26 to 30 ft.	Colorado
175	MP-115	14 to 17 ft.	Arkansas

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PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

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STOCKS AVAILABLE IN:
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WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co.
Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

STEEL SHEET PILING—*FOR SALE AND RENT*

3000 pcs. Beth SP-6a 40′ to 56′—practically new
Attractively priced—prompt shipment from New York State
a joint venture of

WHISLER STEEL PILING CO.
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St. Louis 1, Mo.
CHestnut 1-4474

CONMACO, INC.
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DRexel 1-3930

R. C. STANHOPE, INC
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New York 17, N. Y.
Murray Hill 2-3075

Phone or write any of the above

CRANES FOR RENT

CRAWLERS Capacities to 60 tons Booms to 180 ft.
TRUCK CRANES Capacities to 35 tons Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

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CRANE SERVICE, INC.
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5000 LB. ASPHALT PLANT

Cedar Rapids 4x10 Screens
Hot & Cold 4 Comp. Bins - Syntron Feeders
Highway Hot Oil Heater - Asphalt Pump
Electrical Switches & House

Price $50,000.00

THE BITUMINOUS CONSTRUCTION CO.
3301 Ridgewood Avenue, Baltimore 15, Md.

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED *(as available)*

GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

PIPE

Surplus New & Used
FOR SALE

ALBERT PIPE SUPPLY CO., INC.

PILING • PIPE • CULVERTS • VALVES & FITTINGS

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PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW-USED

GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

EST. 1904

DAVIDSON
PIPE SUPPLY CO. INC.

Seamless and Welded Steel Pipe
Fittings, Valves
Pipe Fabricating

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

ASSOCIATED PIPE & FITTING CO.

PILING PIPE
SHELLS
MANDREL
FITTINGS

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CEMENT
PIPE

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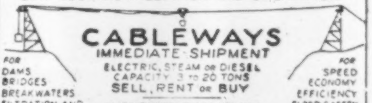

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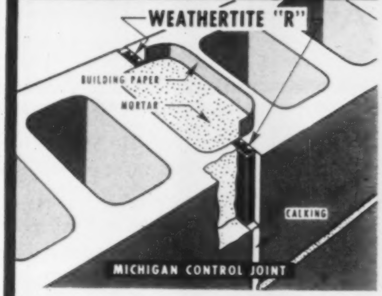

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Even unreconstructed critics of "pork barrel" bills will have to admit that this year's rivers and harbors bill contains some easily digestible meat. And one particularly appetizing bit is permission offered to the federal dambuilding agencies, mainly the Corps of Engineers and the Bureau of Reclamation, to provide space in their reservoirs for anticipated municipal and industrial water supply needs (ENR July 3, p. 27).

This long-sought addition to the federal multipurpose concept appears to have been accomplished without upsetting the traditional role of local initiative in the water supply field. Municipal and industrial customers must vouch their willingness to pay full value for the federally impounded water; they are free to go elsewhere if they can develop alternate sources more cheaply.

Perhaps it was the lack of such repayment mechanism and safeguards that caused Congress to balk at a companion measure in the original rivers bill that would have allowed the Corps of Engineers and Bureau of Reclamation to consider low flow augmentation in streams in project design. Once again it appears pollution control has suffered because its benefits cannot readily be expressed in dollars and cents.

It is to be hoped that the good job Congress did in aiding water supply development this year can be duplicated soon in the equally critical area of pollution abatement.

Are Streams Getting Cleaner?

Municipal sewage treatment plant construction did extraordinarily well between 1953 and 1957, as shown in the 1957 Inventory of Facilities soon to be published by the U. S. Public Health Service (p. 41). However, although the rate of increase in population served by treatment was 4½ times what it was in the previous four-year period, figures indicate that the total pollution load dumped into the nation's streams by municipalities actually increased in the period 1953-57.

Obvious questions present themselves: Are we really losing the clean streams battle in spite of the high building rate of recent years? Just what needs to be done to change the status quo in total pollution load?

U. S. cities appear to be winning their part of the anti-pollution fight. The biggest source of pollution—raw sewage discharge—actually decreased between 1945 and 1957, in spite of a huge jump in the total sewered population. The sewage works category registering the largest increase in pollution discharged is primary plants. But recent analyses (ENR Oct. 17, 1957, p. 316) indicate that the cost of converting a primary facility to complete treatment amounts to only about 40% of the primary plant's cost, while the converted plant removes over 100% more of the pollution load. Moreover, the inventory figures indicate that the big increase in secondary plant construction has stemmed in part from conversion of primary facilities.

It is not unreasonable to conclude that if the rate of spending is at least kept at the current $600 million a year level an increasing sum will be used to build secondary treatment plants. This should result, we believe, in reducing the over-all amount of pollution reaching the nation's streams.

In view of this conclusion, it is difficult to become overly enthusiastic about current proposals before Congress to double the present $50 million a year federal construction grants program for municipal sewerage facilities. The existing program is working, and working well. To double it would be to introduce a host of factors that could easily upset the applecart. To kill it, as President Eisenhower proposes, would make even less sense, for surely loss of federal aid would depress the present healthy construction volume in the sewage works category.

A Step in the Right Direction

Chicago officials, out to save money for the city, have taken a step in the right direction by reducing the retainage requirements on construction contracts awarded by city departments.

In giving contractors more of the money they have earned, the city is bound to benefit, since under competitive bidding any economic gains handed the contractors will reflect in increased competition and lower bid prices.

Until early this month any contractor figuring a job for a Chicago city department had to plan on having 15% of his total contract price tied up in retainages until he received his final payment for the work done. Now, only 10% of the first half of the contract will be withheld, and this will be reduced to 2% when the contractor finishes his work (see p. 26).

An ENR survey made last year of contractors doing more than 20% of all the highway work in the country showed clearly the deleterious effect of excessive retainages on both contractors and contracting agencies (ENR Oct. 17, 1957, p. 293). Contractors have difficulty enough financing their operations. They work on a slim profit margin (less than 2% according to Dun & Bradstreet); they pay dearly for money; and they often have to pass up bidding jobs because of temporarily being short of cash.

By permitting contractors to reduce their financing cost and thereby encouraging more contractors to bid on jobs, Chicago is going to start getting lower bids on its public works projects than it got with its higher retained percentage. It has been estimated the city might save $500,000 annually by the change. Substantial savings could accrue to any city or state ready to follow Chicago's lead.

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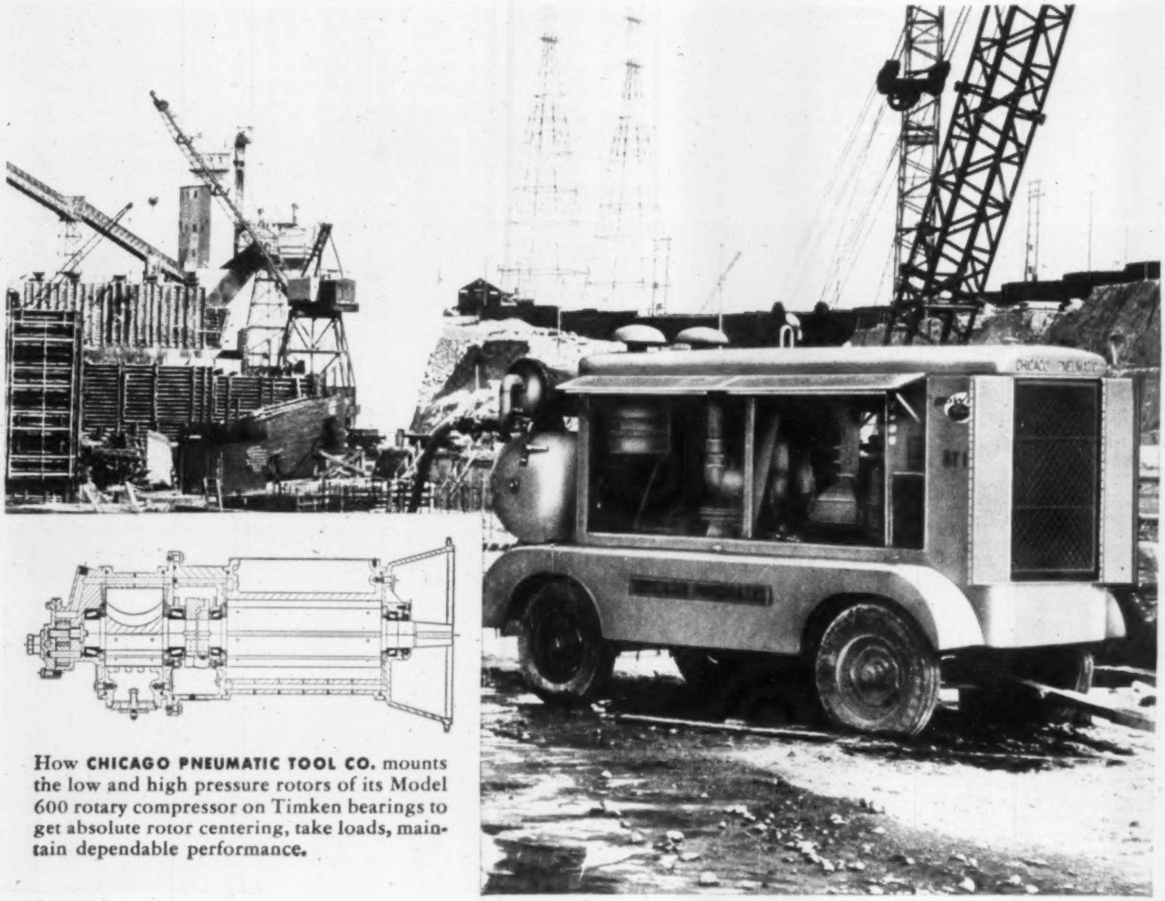

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Today contractors get dependable air power—compressor gets perfect rotor centering with TIMKEN® bearings

CHICAGO Pneumatic Rotary Compressors prove themselves to be real workhorses when "killing" construction jobs demand around-the-clock performance with no room for failure. One of the reasons for their success is that Timken® tapered roller bearings keep them rolling.

Each cylinder of these two-stage compressors contains a high-speed rotor that must be perfectly centered between its end plates, and end plate clearances are close. Timken roller bearings prevent any axial movement, yet take radial and thrust loads in any combination.

Timken bearings virtually eliminate friction. They're geometrically designed to have true rolling motion, and precision-made to live up to their design. They make closures more effective, too. Dirt, dust and moisture can't get in; lubricant can't get out. Maintenance is further reduced.

To get the finest bearing steel, we make our own electric furnace fine alloy steel. We're America's only bearing manufacturer that takes this extra step to safeguard quality from melt of steel to finished product.

So to get your No. 1 bearing value, specify bearings trade-marked "TIMKEN". They make any machine better, because Better-ness rolls on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD